THE

LAKE COUNTY

AGRICULTURAL

ADVISOR

Lake County, Indiana

1914 1915 1916

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irst Prize Winners at the International Live Stock Show, 1916
in Boys' Pig Feeding Contest.

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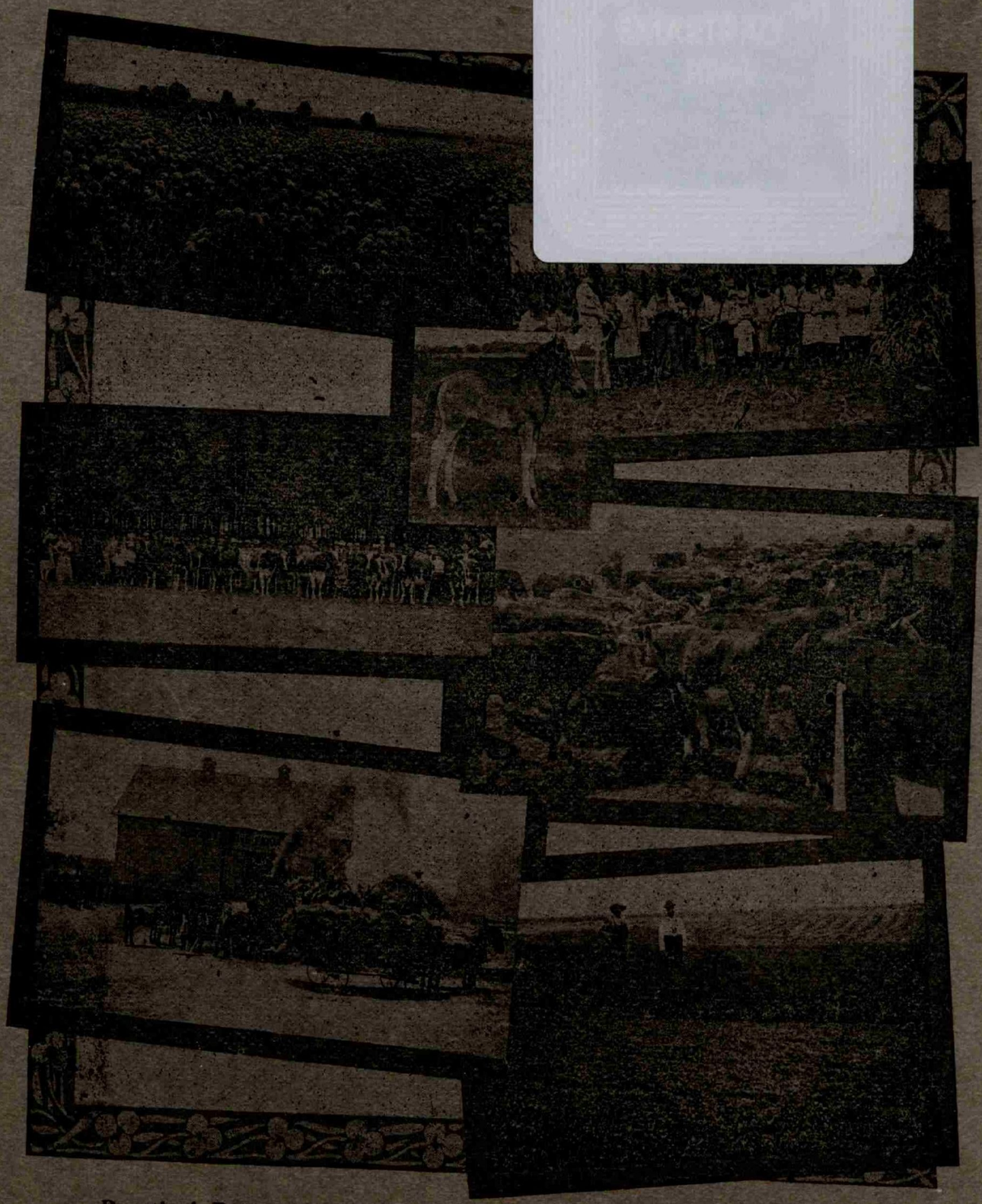

Practical, Progressive Views of Some of the Agricultural Problems.

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The LAKE COUNTY

Agricultural

ADVISOR

LAKE COUNTY, INDIANA

1914--1915--1916

Published for the Future Good of the Agricultural Interests of Lake County, Indiana.

BY

S. J. CRAIG, B. S., M. S. A.

LAKE COUNTY PUBLIC LIBRARY

GREETINGS

The Lake County Agricultural Association extend greetings to the people of the county in presenting you with this book of records and facts as connected with the agricultural development in our county. This Association has been working for two and one-half years in the interests of the agriculture for the people of Lake county. We think it is the best organization in the county for the betterment of Agriculture. We have been able through this organization to accomplish a great many things that an individual farmer could not accomplish. The community meetings that are held monthly at the school houses are but one branch of this organization. The Pure-bred Breeders' Association, the Milk Producers' Association, and then we affiliate with The Gleaners, a farmer organization that does things in the interest of the farmer.

This is the greatest county in the State of Indiana. Her geographic position as the most northwest county of Indiana, and bordering on Lake Michigan on the north and Chicago on the northwest gives her a chance for great development. The Gary mills and schools are leaders of the world.

We have a variety of soils. The sand soils bordering the lake are suitable for building great manufacturing plants and cities. Then next to this sand is the "Cady Marsh" one of the greatest truck gardening districts in Indiana. This area blends into the gray and brown silt loam prairie and timber soil. On this area we find the greatest dairy interests and the highest producing record cows in the State. Our grain and live stock interests become more or less mixed as we go toward the southern part of the county. All the southern part of the county is reclaimed land and some day has a right to become as great a truck gardening spot as is in the north part at this time. The greatest wheat records for a large number of acres on virgin soil is produced in this area.

We only mention our pure-bred live stock in this issue as we wish to combine it into a publication of its own to present to the breeding interests.

Any farmer or land owner in this county is a member of this Association.

S. J. CRAIG, County Agricultural Agent,
Secretary Lake County Agricultural Association.

THE purpose of printing this publication of "The Lake County Advisor" is to place into the homes of all the farmers and rural educators in Lake county, a number of the leading facts connected with the County Agent work. There are phases of advice to follow, work accomplished, and a better understanding of the value of a County Agent to a community. In this county where there are so many different farm activities few people realize the wide scope and importance of practical help along these varied lines. If you have not taken advantage of this work, it may be that you do not have an idea of the good there is in it. The field is large in this county, and to get the most out of the work, we must co-operate to a greater degree.

There is no county office in the county that exacts as many hours of work, day and night, covering as many miles travel throughout the county during the year where the county official has to bear as much of his own expense, with as much required education, practical knowledge and practical experience, for so small a salary. Much of the expense of the work has been donated by the County Agent, because the law is inadequate to allow reasonable expenses or allowance for the duties of the office.

The vocational educational training being practiced in the country schools of the county is a great work in training the young minds to do and see the practical work in life as connected with education. Too long have the educators been trying to have Greek, Latin, and higher mathematics take the place of every day work. Many people have an idea that an education is to get you out of work. Not so, an education is to help you to do more efficient work. It is no disgrace to know how to work, even though you may not have to on account of expected inherited wealth. The child who gets a practical education will make a better citizen and appreciate a home of its own some day that is a home, and not merely a place to stay. Every child should obtain sufficient knowledge in school to take care of its health, possessions, and know how to do the every day practical things in life. We need more educated workers and not job seekers to maintain a high standard of government.

THE COUNTRY GIRL'S CREED.

BY FLORA BULLOCK.

I believe that the country is a better place for me to live than the city, because it is cleaner, quieter and more beautiful. I believe that I can find no nobler work than to use all the knowledge and skill I can obtain to make my country home a place of happiness for my family and friends.

I believe that the community in which I live is a part of my home and that I should work earnestly with my neighbors to bring more helpfulness and joy into the community life.

I believe that God did not mean to shut me in a house, away from the free air and sunshine. I believe that all the blessings of the great outdoors are intended for me. I believe that for me, too, it is an ennobling privilege to work with Nature—to care for the life-giving soil with my own hands, to sow the seed and help it grow. I believe that all my life I should plan to have some work that calls me every day into the open air.

I believe in learning to enjoy good books, good music and good pictures. But most of all I believe in reading in Nature's unwritten books the wonderful stories of plants and animals; in listening to the music of birds and insects, of wind and rain; in watching the ever-changing pictures of earth and sky. For I believe that God has given me all these things to make my country home beautiful and dear to me.

THE FARM BOY'S CREED.

"I believe that the country that God made is more beautiful than the city that man made; that life out of doors and in touch with the earth is the natural life of man. I believe the work with nature is more inspiring than work with the most intricate machinery. I believe that the dignity of labor depends not on what you do, but on how you do it; that opportunity comes to a boy on the farm as often as to a boy in the city; that life is larger and freer and happier on the farm than in the town; that my success depends not upon my location, but upon myself; not upon my dreams, but upon what I actually do! not upon luck but upon pluck. I believe in working when you work, and in playing when you play, and in giving and demanding a square deal in every walk of life."

GREATEST ASSET IS CHARACTER.

Right living, physically and mentally lead up to character, and character is the backbone of life. The character that you build in the community is your greatest asset in business. The man who dopes his sugar, waters his milk, or gives an inferior substitute to his patrons in place of the real article must know that he is doing wrong morally, but he doesn't realize the commercial and true value of doing right.

The successful future of a nation depends on the intelligent development of a permanent and profitable system of Agriculture

Three Good Crops—Alfalfa, Corn on Alfalfa Sod and the American Farm Boy.

DOES FARMING PAY?

Farmer Slack when in to-day said that farming did not pay, said he wished he could find a hand who would buy his house and all his land. A farmer's life is worse than—well I've concluded that I'd sell. Early up and late to bed yet I cannot come out ahead. Worse than that said farmer Slack, every year I am falling back. I cannot go on in this bad way. No sir, farming does not pay. Farmer Slack may be all right, yet we beg to doubt it quite. In bright sunshine or in rain, he does nothing but complain. We who see his shiftless way know why farming does not pay. He is the one who trusts to luck—Never shows the slightest pluck. Sows his grain and plants his seeds in the soil when full of woods and the season's really over, yet he hopes for goodly store. Gates are hanging by one hinge, buildings show a dusky tinge, stock and poultry roam at will over the grain and highway hill. Call the dog and drive them back, that't the way says Farmer Slack. How could farming pay this man or others who adopt this plan? Care to details that's the thing for a farm to riches bring. Farmer Thrifty over the way seems to make his farming pay. And his farm joins on the back with the land of Farmer Slack. Soil no better when begun,but shows the work that has been done. Every foot has been enriched with care and now it yields its greatest share. Farmer Thrifty's stock is fat and his buildings neat and pat, fences kept in straightest line barring out all rooting swine. Nature knows no greater charm, than this farmer Thrifty's farm. He has a place for every tool, sends his children to a good school. Builds a fortune plank by plank, puts his money in a bank, and if you think this does not pay, ask him and see what he'll say.

Farmers of West Creek Studying a Variety Test With Soy Beans.

THE GREAT PROBLEMS.

"A dog tried to open a door. He scratched it, threw himself against it, struggled to get his nose under it and burrow his way out, but at last decided that the door would not open and never could open, so he lay down before it and went to sleep.

A child was watching the dog, and he laughed and turned the handle with his small fingers, and the door was open. Then he took a book, and sitting on the floor, he turned over the leaves one by one and gazed at the queer black marks upon them without knowing what they meant, for he was a little child and could not read. As there were no pictures to be found he tossed it away.

But a boy picked up the book and laughed and read page after page of a wonderful fairy tale. Then he went to school and puzzled his head over a sum which had to be brought to the class that morning. Try as he might the sum would not prove, and the boy said, 'I can't do it. I'm sure it can't be done. There must be a mistake in the book.'

But the pupil's teacher laughed, and, taking the blotted exercise book from the boy, he quickly worked out and proved the sum. Then he turned to his own studies and went into the laboratory, for he was learning chemistry. All morning he labored among the gases and the acids, but he could not get the right combinations and only succeeded in making a loud explosion. 'It's all rubbish to say that potash and carbon form potassium,' he said. 'They simply explode and I defy anyone to prove they don't.'

But the master, who had heard the noise, came and took it into his own hands, and soon the metal was dropping from the condensor. After school was over the master, who was getting an old man, sat in his study reading a paper on modern scientific thought. As he read his brow darkened, and at last he flung it down and said, "It is a monstrous idea. How can the creation of the world have taken millions of years? The good old Bible account of the six days of creation is good enough for me,. And he wrote an angry letter of remonstrance to the great professor who had sent him the paper.

But the professor only smiled, for he was a geologist and had read the message of the rocks. He himself, one of the deepest

thinkers of the day, sat late into the night among his books, trying to fit some newly discovered law of physics into his schemes of things and to bring his mind nearer to a solution of the great why of the universe. At last he bowed his head and said, 'It is impossible. Facts are too conflicting. I can not explain them and I doubt if there is an explanation.'

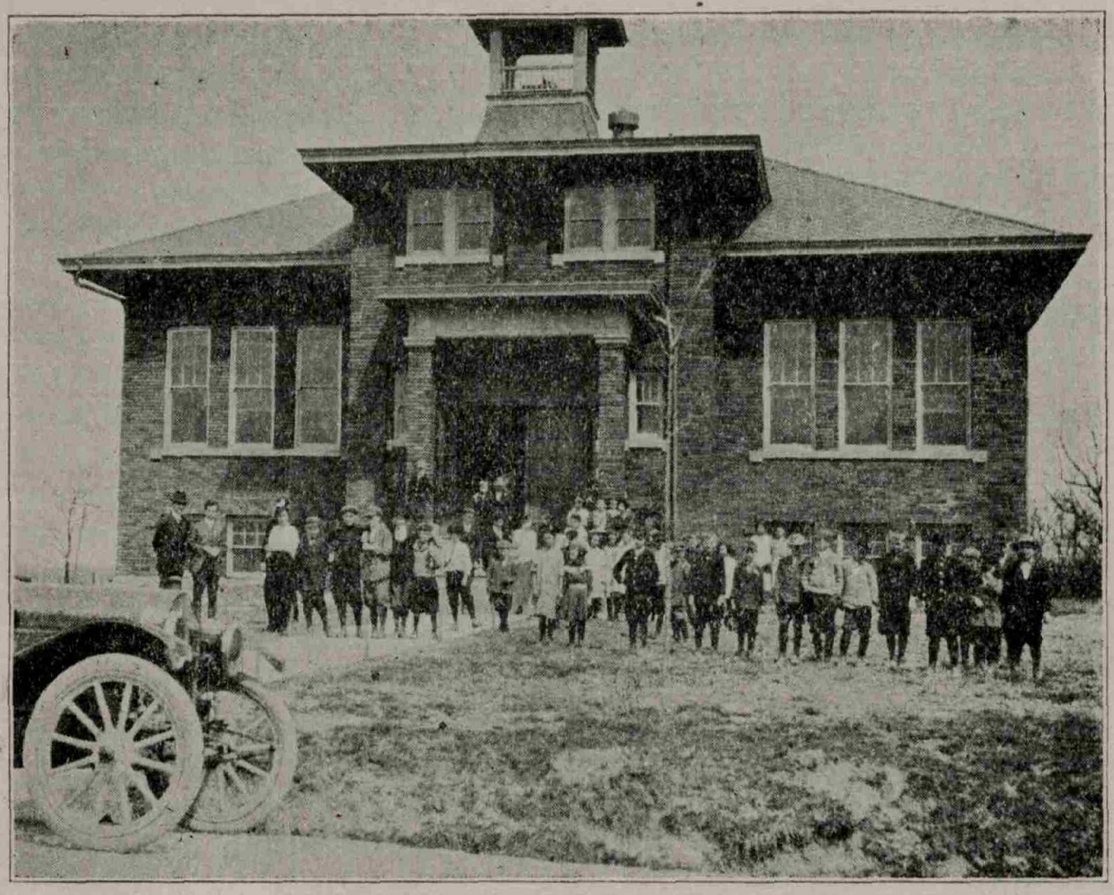
And so it goes. We find ourselves stumbling along in the old rut, trying to do things that seem impossible when we might ask and get relief from some authority that is a specialist in that line.

The farming problem of today calls for the best assistance that it can get regardless of who found it out first. The real County Agricultural Agents are in a position to secure the best information that might afford relief to the farmers of a community. We must do things in a more modern useful way, if we are to move forward. The farming methods of our forefathers are not good enough for the present and future generations.

The real thinking people will not argue but that our soils are poorer than they were in their virgin state because of the great crops that have been taken from them. You cannot take plant food from the soil continually and not replenish without robbing the soil of its life and plant food elements. This is the greatest problem before the American nation today. Every popular government confronts storms ahead and it now seems that the stay and hope of this great Republic is the adoption of a profitable and permanent system of agriculture. The owners of the land are only stewards of God taking care of his property while on this earth. They have a right to make all they can out of it, but are they true Christian people if they rob this soil for the coming generations?

God grant that the deep and broad thinking people of this state will adopt the systems of crop rotations that will help to build up and make more productive soils; use more legumes that have the power with the aid of finely ground limestone and bacteria to use millions of dollars worth of the free nitrogen over every acre of land to feed to our soils. That these soils will produce more produce for more live-stock so that we may get more manure and organic matter to return to the soil to give it more life and plant food holding capacity; use more phosphates to feed every living cell in plant or animal life; to secure as good education for country as city child; that we may have these things to get better schools, better roads, better homes for better people to take care of our Almighty God's once fertile fields supposed to contain an inexhaustible supply of plant food.

Grant us the needed inspiration in this great Agricultural movement so that our great industrial establishments which are the marvel and wonder of the world may not vanish and go into decay and that our coming generations will not be subject to famine as now are the people of the once fertile fields of the old world, because of lack of success in building up the backbone of the nation, **Agriculture.**



Lincoln School, Hanover Township, Where Boys and Girls Are Up-to-Date in the Study of Practical Agriculture.

SCHOOLHOUSE MEETINGS.

Starting with the County Agent's work in Lake county, North township has had monthly meetings with a mixed program to help their conditions. This is in the truck gardeners' district and they have made more real progress than any other agricultural industry of the county. Other townships hold monthly meetings, but have vacation, the same as the schools.

These meetings are far ahead of the Farmers' Institutes held once a year as we discuss every month the problems before us as well as having the local parents and children take part in the program.

Our modern schoolhouses have the basements built with an assembly room for these rural home meetings.

Our school system has special music supervisors that go from school to school and give the children their music work. The schools render a great service at these meetings by furnishing music, readings and local talent plays. I know of no work that we are doing that brings the neighborhood people together and creates a better understanding of exchanging our best thought and ways of doing things.

VOCATIONAL EDUCATION IN THE SCHOOLS.

There has been good co-operation with this work through County Superintendent Heighway's department. The teachers, children, and parents have been putting forth much effort to help along these lines. With every one helping, we have accomplished a good part of our practical farm work through the schools.

In the girls' gardening and canning club of 1914, Anna Wesley from Ross township, won first. She had one of the nicest home

gardens in the county, and the picture only tells part of the story. In the boys' corn club Lake county won first in northern Indiana, competing with 18 of the northernmost counties. Wayland Zieseniss, the winner, not only won first in Lake county, but for northern Indiana, and besides receiving a free trip to Purdue to the Short Course, along with other township winners, he got a trip to Washington, D. C., a pleasure that few older people have enjoyed.

Wayland Zieseneiss and His Ten Ears of Corn.

The poultry clubs are helping to solve many of the little knacks of successful poultry raising which the average farmer has not learned. The pig club is helping to introduce the self-feeder and better balanced rations than have heretofore been used. The corn club, while not large, has been instrumental and influential in causing the corn producers to practice and adopt better methods. Many times the children are the leaders in testing the seed corn, treating oats for smut, spraying orchards and interesting the parents in the schools.

Ridge School Children.

"To train boys and girls in merely literary accomplishments to the total exclusion of industrial, manual, and technical training tends to unfit them for industrial work, and in real life most work is industrial."—Ex. Pres. Roosevelt.

George. Washington said: "Agriculture is the most healthful, the most useful and the most noble employment of man."

"Agriculture is the foundation of manufactures, since the productions of nature are the materials of art."—Gibbon.

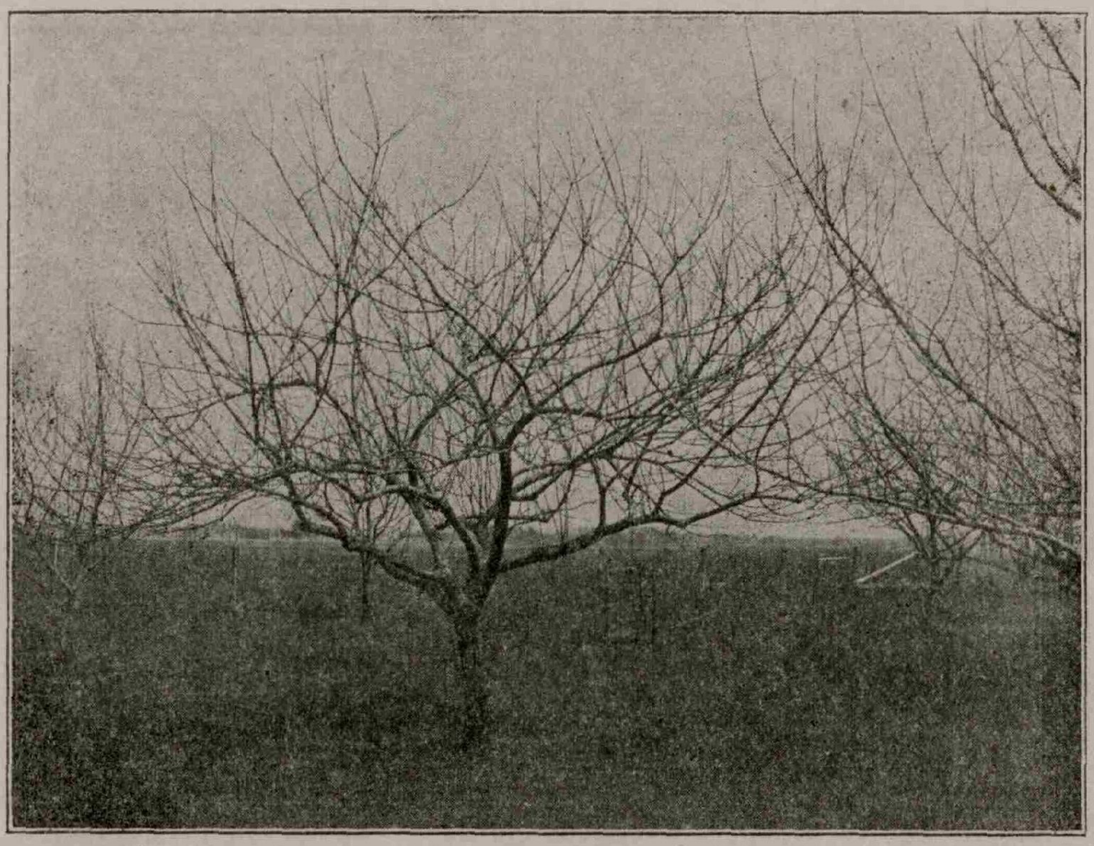
"He that would look with contempt on the pursuits of a farmer is not worthy of the name of a man."—H. W. Beecher.

"Agriculture for an honorable and high-minded man, is the best of all occupations or arts by which men procure the means of living."—Xenophon.

"No other human occupation opens so wide a field for the profitable and agreeable combination of labor with cultivated thought as Agriculture."—Lincoln.

"Whoever makes two ears of corn or two blades of grass to grow where only one grew before, deserves better of mankind, and does more essential service to his country than the whole race of politicians put together."—Swift.

The Home Orchard



Tree Well Grown in Shape On A Hobart Township Farm.

CARE OF THE HOME ORCHARD.

It is true that the majority of the home orchards would render more revenue and give better returns if they had better care. The owners are not altogether to blame for this matter, as they are not in the commercial orchard business. Again, many orchards are filled with trees that are not what the treeman represented them to be when they were sold. When our fathers or grandfathers set out these orchards there were few insects or diseases harboring around, that were always ready to destroy the fruit. Today it is different; some new diseases have been imported into the country within our own lifetime, and whether it is insects or diseases which are attacking the orchard, the one makes it easier for the other, and it is but a short time until they get a foothold in our home orchards. Commercial men who follow orcharding as a business are prepared for these attacks, and can control them. The average person has not been paying any particular attention to the diseases, or in fact, scarcely notices them until it is too late.

In the northeastern part of the county we find the San Jose scale has been spreading rapidly, probably coming from the Michigan fruit section. The people did not know what it was in the orchards giving trouble until it had a good start. We also find oyster shell scale, white scurfy scale, and occasionally the tent caterpillar living over through the winter on the trees. On the fruit we find San Jose scale, occasionally the oyster shell, sooty-

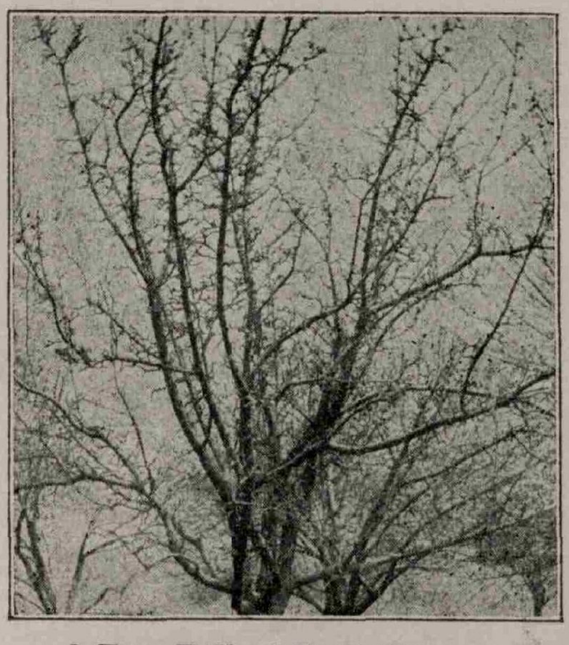
blotch, dry rot, brown scab, work of the curculio and the codling moth. All of these can be controlled by spraying. They could be controlled more easily if we would first prune the orchards.

PRUNING.

Pruning can be done most any time of the year, but there are times that are more preferable than others. Since the majority of us are not in the commercial orchard work, it would be better to do the pruning any time convenient during the winter, so as to have it out of the way by the time the farm work commences in the spring. The first suggestion of pruning would be to cut out seedling trees that do not bear good fruit, and any other variety that has proven to be no good, along with all rotten and decayed limbs. These trees, if not destroyed or taken care of, make good breeding places for insects and diseases. A few good trees well pruned and taken care of mean more to every home and family, than the orchard that has a few good trees that are wholly handicapped by the greater number of poor trees without any care.

Ten or twelve good bearing trees, (and it is possible to have that many) will make a better farm orchard and one that will supply apples for most families.

When we cut limbs from the tree, we should cut them out as well as cut them off. By cutting out we mean to cut a good clean, smooth wound, close and parallel to the limb from which you are cutting. Any wound larger than the size of a nickle should be painted, and white lead and raw linseed oil is preferable. However, the Colorado Experiment Station does not advise this treatment. We should have our trees low set and spreading, allowing the sun light in at the top. In order to prune a tree successfully, we should know the difference between wood-bearing wood, and fruit-bearing wood. These points are all practical and important to every tree owner or orchardist.



A Tree Full of Fruit Spurs.

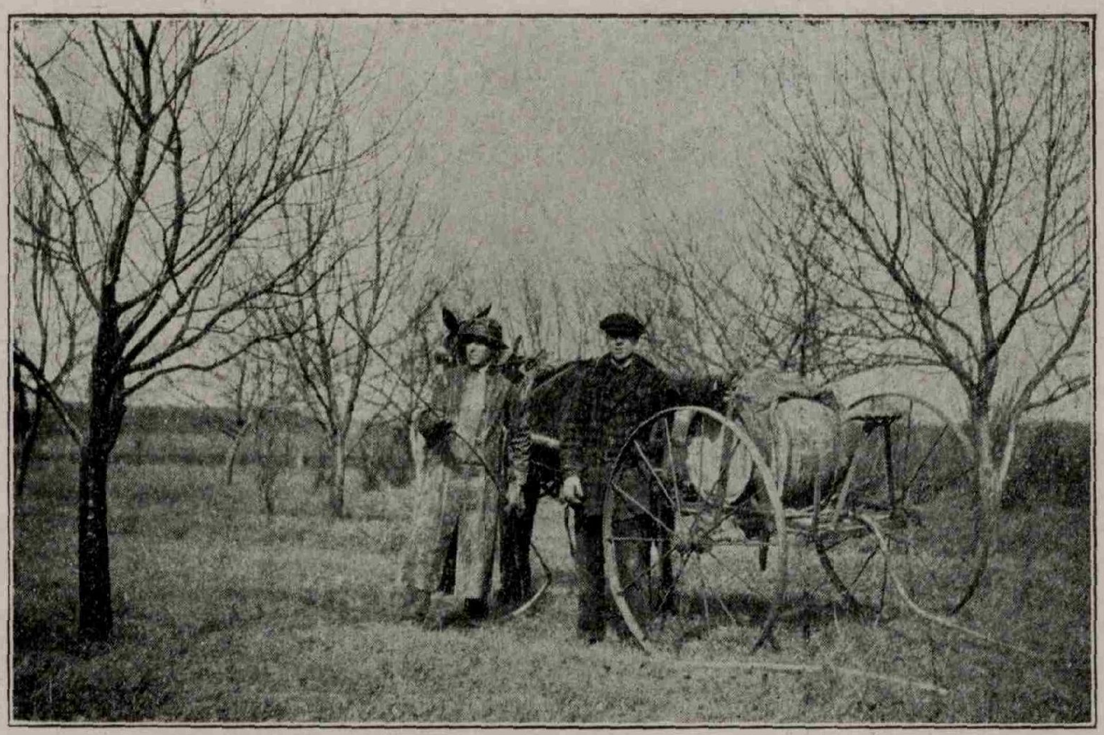
This tree is full of fruit-bearing wood. It is not necessary to cut out limbs here, except where they cross-fire or rub against one another. The smooth limbs or water sprouts should be moved.

This tree is too old to have its shape rebuilt as may be done with younger trees.

[redacted]

use. They also bought a barrel of lime sulphur for spraying purposes.

The first, or the dormant spray, was applied when the trees were still sleeping, or before the leaves came out, and the strength



County Agent Helping to Introduce Pruning and Spraying.

of the solution used was one gallon of lime sulphur to eight gallons of water. The next spray was when the buds began to break and this solution had to be somewhat weaker on account of the young, tender foliage. This was with a strength of one gallon lime sulphur solution to forty gallons of water. The next spray was when the flowers fell, and we used 1¼ gallons of lime sulphur and one pound of arsenate of lead powder to fifty gallons of water. This same strength of solution was used for the next sprays, which were about one week apart. Unfortunately, the season was wet, and it rained after each spray, so that it did not have the full effect.

We did not spray during the summer months for the late brood of codling moths, which would have been the proper thing to do. One thing we did that is of practical importance at this time is the spraying of one-half of one tree and leaving the other half

unsprayed. From the sprayed portion of the tree we got twelve baskets of good apples; from the unsprayed portion we got six baskets of apples, five and one-half of which were classed as culls. While it is true that there are many apples harvested in the county, they are not good, sound apples, and most of them would be in the same class as those that were not sprayed. There were six different kinds of apples in this orchard, and we kept a sample of each kind, and it certainly looks as though Lake county could raise enough good apples for all her people, if we would but take the necessary precautions in destroying the insect and fungus diseases and care for the orchards.

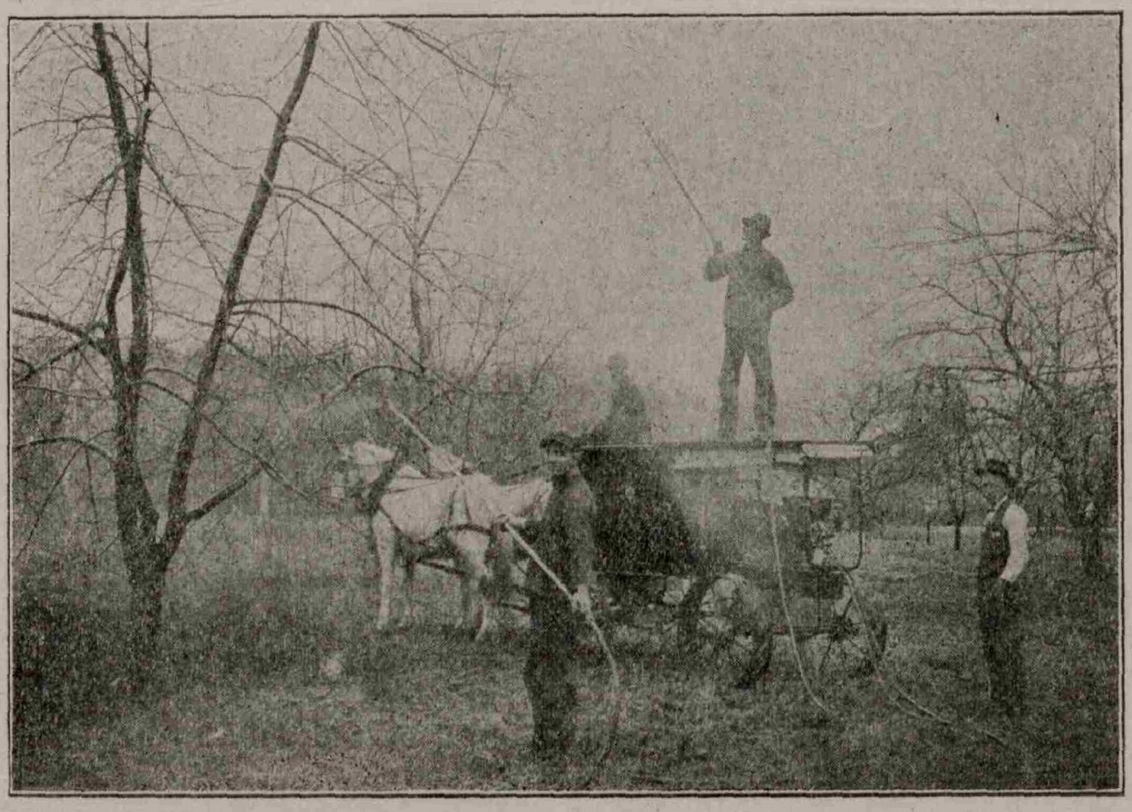
School Children and Neighbors at Demonstration of Pruning, Spraying and Burning the Brush—Demonstration in Hanover Township.

THE PRACTICAL WORK THROUGH THE SCHOOLS.

In the fall of 1915 the County Agent started the original idea in the State of pruning and spraying at least one tree for each of the schools in the county that desired it. We are glad that the majority of the schools took advantage of this proposition. The children were taught the difference between wood-bearing wood and fruit-bearing wood; to recognize the different scales, blights, when to spray and what to spray with, and to burn all brush instead of leaving it in the orchard.

During the winter a tree was pruned and sprayed with the help of the school children. The same trees were sprayed again in the spring when the blossoms fell and then again ten days later. As a result of this work several spraying outfits have been purchased and some home orchards taken care of by the children.

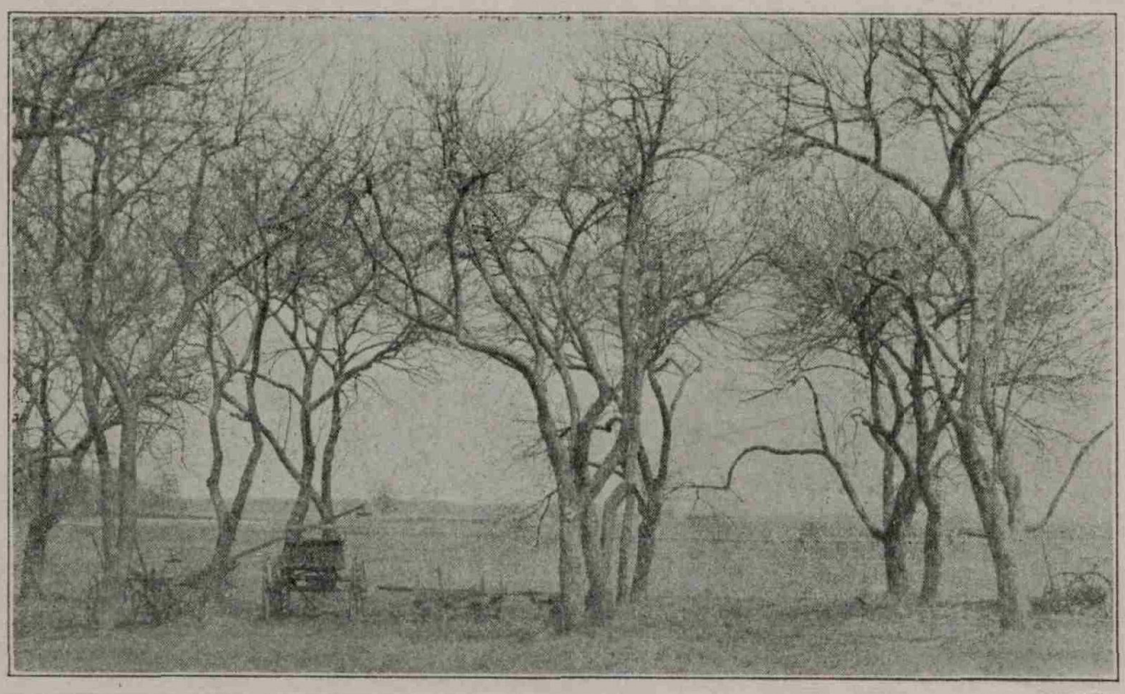
The plan of spraying is very much better than where a horse-shoe is hung on the tree to bewitch the tree so it will bring forth fruit. Some people really believe this or driving nails in trees are practical things to do. Mr. Fred Frank of Hobart, Ind., was the first person to secure a large power spraying outfit to protect and save the home orchard. This outfit is not only being used by



him, but a few of his neighbors. For the dormant or winter spray, which is being applied here, we use one gallon of lime sulphur to eight gallons of water. This winter strength spray should test five degrees Baume. or 1.035 sp. gr. and the summer strength spray should test one degree Baume. or 1.007 sp. gr., when ready for use. When the buds commence to break open in the spring use a spray of one gallon lime sulphur to forty gallons of water. Then when most of the petals or flow-

ers have fallen use 1¼ gallons lime sulphur, and 1 pound arsenate of lead powder to 50 gallons of water. For the next spray use the same strength solution about ten days to two weeks later.

The tree that is filled with fruit spurs may not be as pretty as the



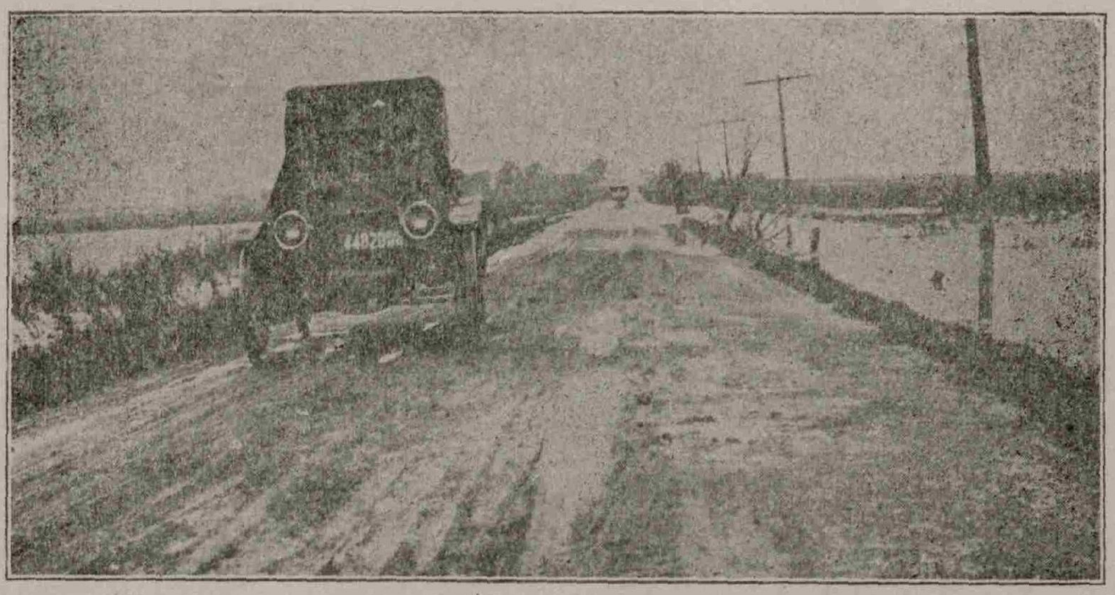
smooth limbed tree, but is much more profitable. This tree is one that is well shaped, growing close to the ground, but has a few water sprouts which need to be removed from the center of the tree. The tool shed is one of the most important buildings on the farm, but the orchard will hardly serve that purpose. When trees are trimmed as high as these the little brush in the top does not afford a great amount of shade, and has but little fruit-bearing wood left. The better policy would be to have the tool shed by itself.

Horseshoe Method.

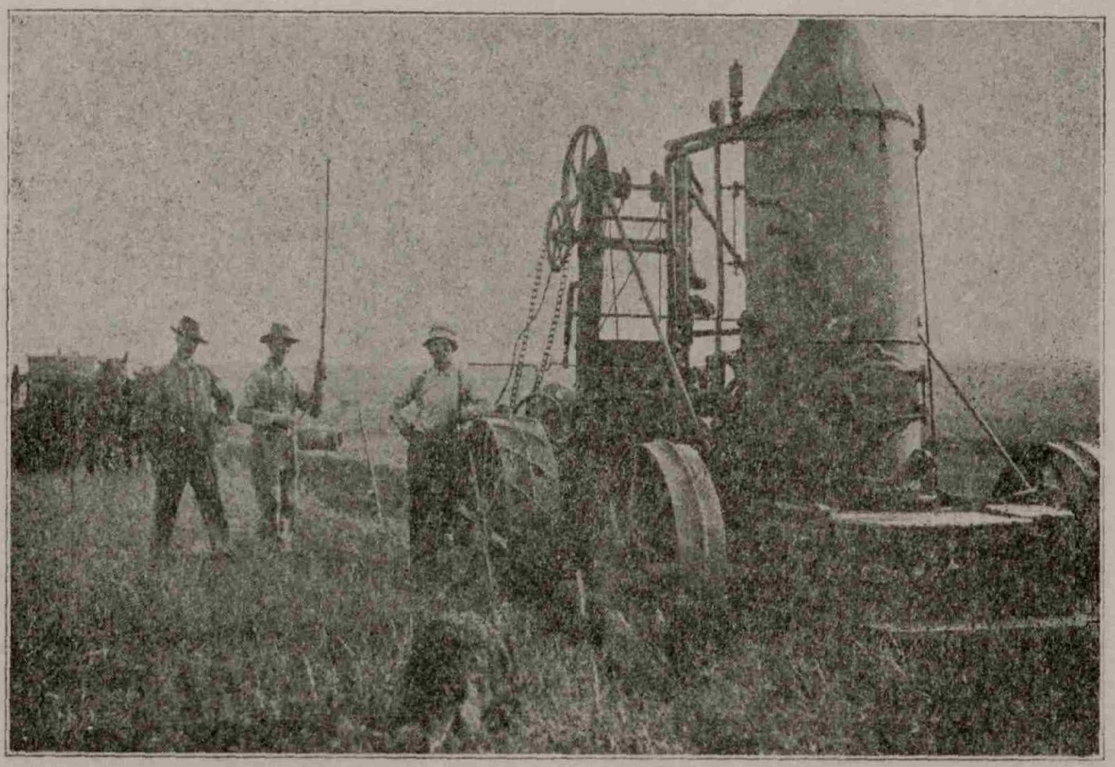
The practice of having a horseshoe on a tree, or of driving nails into a tree to make them bear fruit is probably explained in this way. It creates a change or disturbs the circulatory system and the tree in trying to reproduce itself, sends forth fruit.

Drainage.

The lack of drainage helped to give Lake county its natural name. This picture was taken May 22, 1914, on what is known as the Beaver Dam Road, one of the main highways of the county.

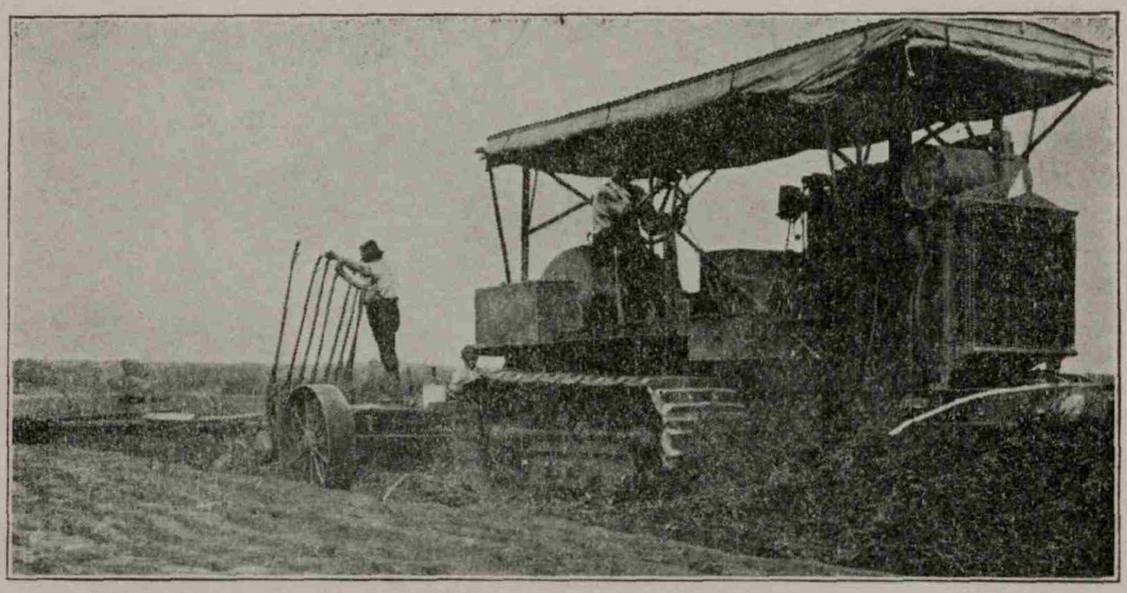


This land can be made very profitable with a well constructed drainage ditch and proper tiling, the same as in the Kady or Kankakee marshes. The old method of tiling by hand is being replaced by the modern tile machinery as illustrated. There are

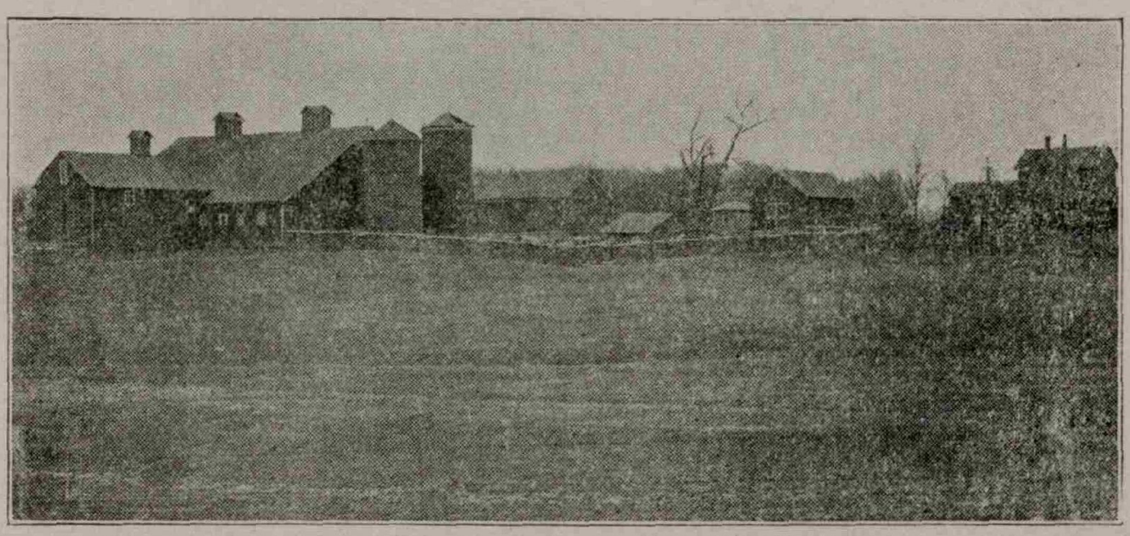


several different machines in the county, and one that was purchased this spring digs from 50 to 60 rods of ditch per day. The Kankakee marsh, which has only been reclaimed for a few years, gives us some of the richest and best soil in the county. Many of

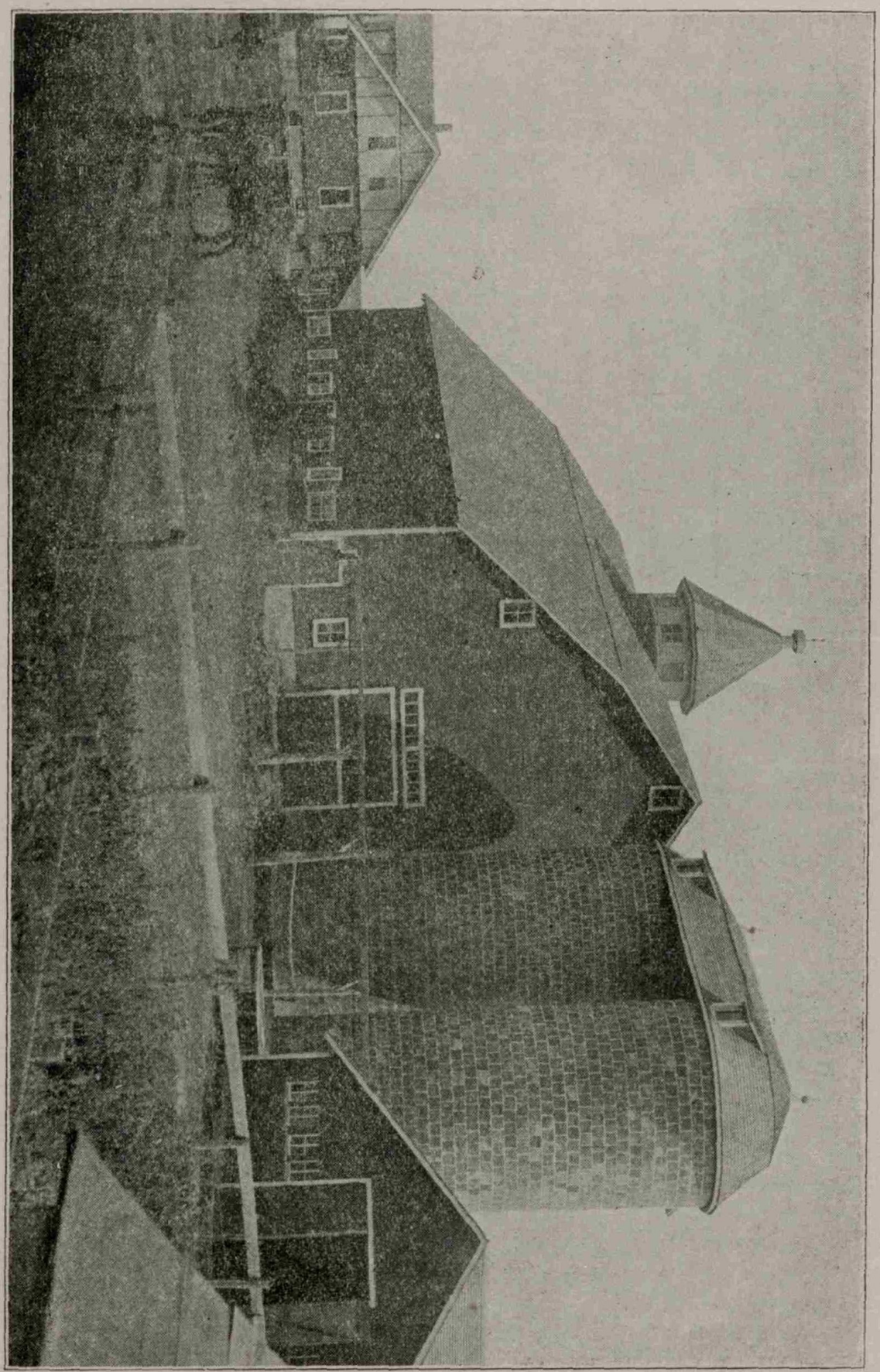
these marsh farms are covered with reeds, willows, and other wild vegetation, which is easily plowed under by a large tractor, as



shown which is pulling eight plows. This tractor will work where horses can not. At the present time we have a number of smaller tractors which pull from two to three plows, that are doing very effective work on the uplands in the county. These tractors are a great help, and save the draft horse in the busy season, and also get the ground or seed bed prepared at the proper time. People have found that it is an advantage to have a well prepared seed bed for grain as well as for garden truck. The tractors are used in this county to pull plows, discs, harrows, binders, threshing machines, saw wood and are a great help to save the hard work on horses when extra power is necessary. This year the small tractor might have helped to save in the neighborhood of one hundred horses which were killed with the extreme heat during harvest.



Good Farm Buildings, Dairy Cattle and An Alfalfa Field.



Good Drainage Made It Possible to Build These Good Farm Buildings on Reclaimed Land.

After good drainage comes the feeding of the soil. Crops are surely made out of something and some day that something must be replaced.

No Plant Food Applied.

These two views show wheat growing in the same field under the same conditions except the application of 150 pounds of acid phosphate to the lower one. The drainage is the same; the pictures were taken within 16 feet of each other.

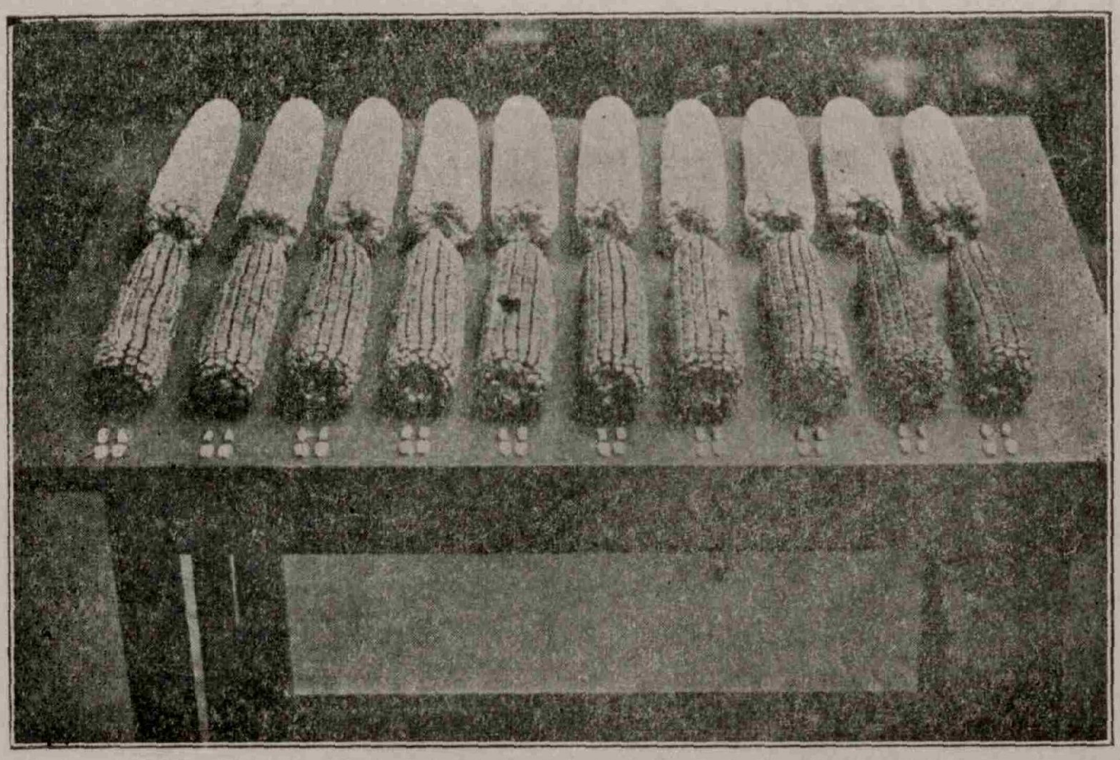
There can be little soil improvement or advice given to be of much value in increased crop production until a good system of drainage is put into use on any farm.

Phosphate On Wheat.

Which of these two methods of growing wheat would you prefer to use with a good system of tile drainage?

Good drainage will help to liberate plant food by letting the air in to break down the soil and allowing the bacteria to work to better advantage. A well drained soil is more apt to be a sweet soil.

Corn



CORN GROWN IN LAKE COUNTY.

The average yield of corn in Indiana for the past two years has been 36.4 bushels per acre. The average number of bushels grown by the boys who were in the club work is 74 bushels, or a little more than double the average state yield. The first county seed corn day was held October 6th, 1914. We are showing the best ten ears of white corn and the best ten ears of yellow corn in the show, with the championship given to the yellow. Some of the older residents remarked that it was the most progress that had been made in an educational way by promoting better seed corn up to that time.

SELECTING SEED CORN.

The selection of seed corn should be taken up in the fall while the corn is growing in the field under normal conditions. Experiment Station tests prove that the selecting of the best looking ears from the corn crib does not give you any special benefit over the poorer shaped ears. It seems reasonable to believe that the reason for this is that when seed corn is selected from the crib we know nothing about the fertilization of these particular ears. When we go to the field to select corn we have in mind the strong, vigorous stalk of corn that has a well developed rooting system, with an ear of the proper size and height hanging down on the stalk. We are not anxious to select a good big ear from one stalk in a hill, as we would rather select corn where there are two or

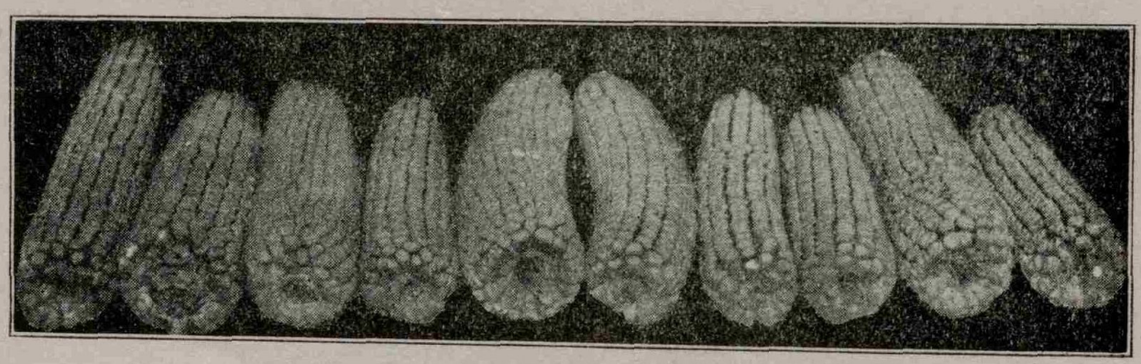
three stalks growing in the same hill. This work to be done successfully ought to be carried out before corn gathering time. Some hitch a horse to a stoneboat which is narrow enough to be pulled between the rows of corn, and then one, two, or more men can walk along with a sack over their shoulders, taking a couple of rows at a time, picking out the best seed ears, and putting them in the box or other receptacle on this stoneboat, and letting the horse haul them to one end of the field. Other methods can be used which appeal to the man who is doing the work. Select at least enough corn to plant your own acreage for the next year. It would be well to figure on one bushel of seed corn for each six acres you intend to plant, and then select a few bushels extra. If you have an extra good, high yielding corn gather some seed to supply your neighbors.

WHERE TO KEEP SEED CORN.

In the fall of 1914 it was a disgusting sight to see early picked seed corn hanging on windmills, milk houses and sides of buildings. In 1915 the percentage was much smaller, which shows that we are making progress. This work was accomplished principally through the schools.

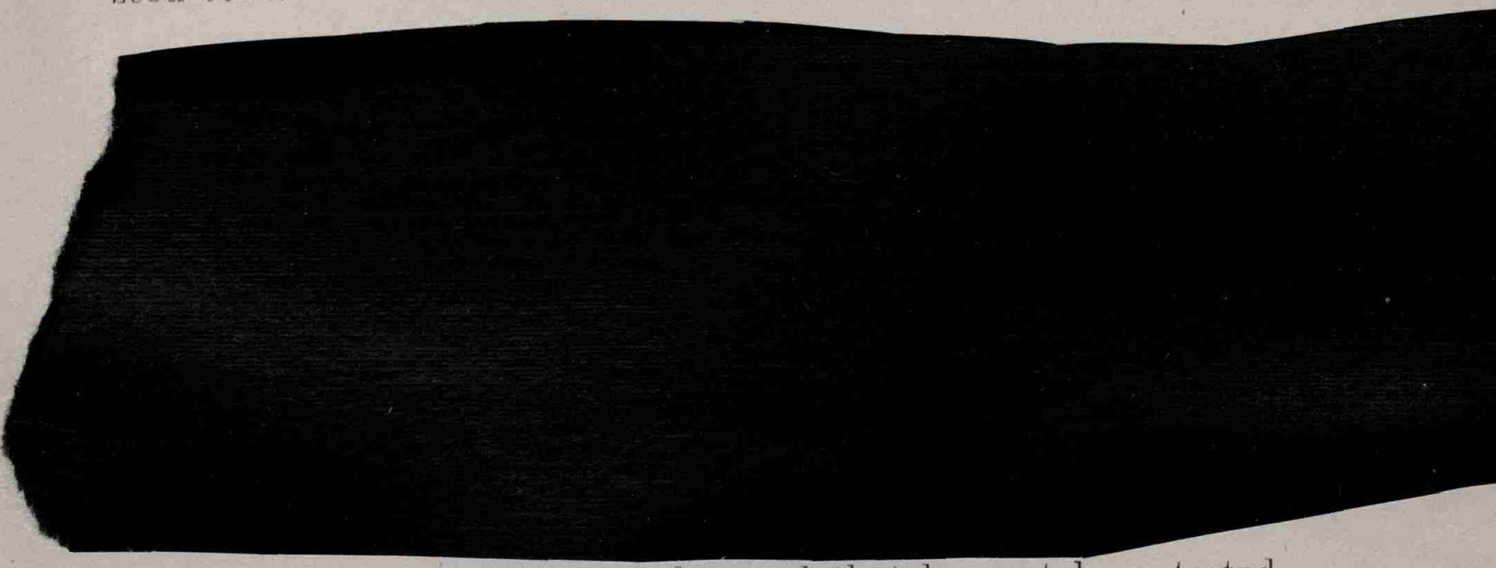
The dairymen know that a cow will not do her best if she is poorly fed and left out of doors during the cold weather. Why then will some of these same fellows pick seed corn early and leave it out doors to get damp at night and warm in the daytime in the fall? Does not moisture and heat start germination? Then when the winter weather sets in, the germs are frozen or weakened. The next spring the corn germinates poorly and early picking of seed is condemned.

The proper place to store seed corn is in some building where there is a circulation of fresh air and where the corn is protected from the weather, rats, and mice. Some hang the corn on racks suspended from the ceiling on rafters by wire, while others make a cage with finely woven wire that will keep out the vermin. Use any good practical method.



The cut of the ten ears shows one of the big hindrances that we have in trying to grow better seed corn when we depend upon purchasing seed corn each year. These ten ears are representative of the different types or sizes taken from a bushel of seed corn that was shipped for seed purposes by Mr. Kline, president of the

Indiana Corn Growers' Association, to one of our dairymen. We are sorry to say that there were more than one bushel shipped into the county. We do not discourage the buying of good seed corn, but believe it is time people were educated to the point that we should not throw our money away for feeding when buying good seed corn.



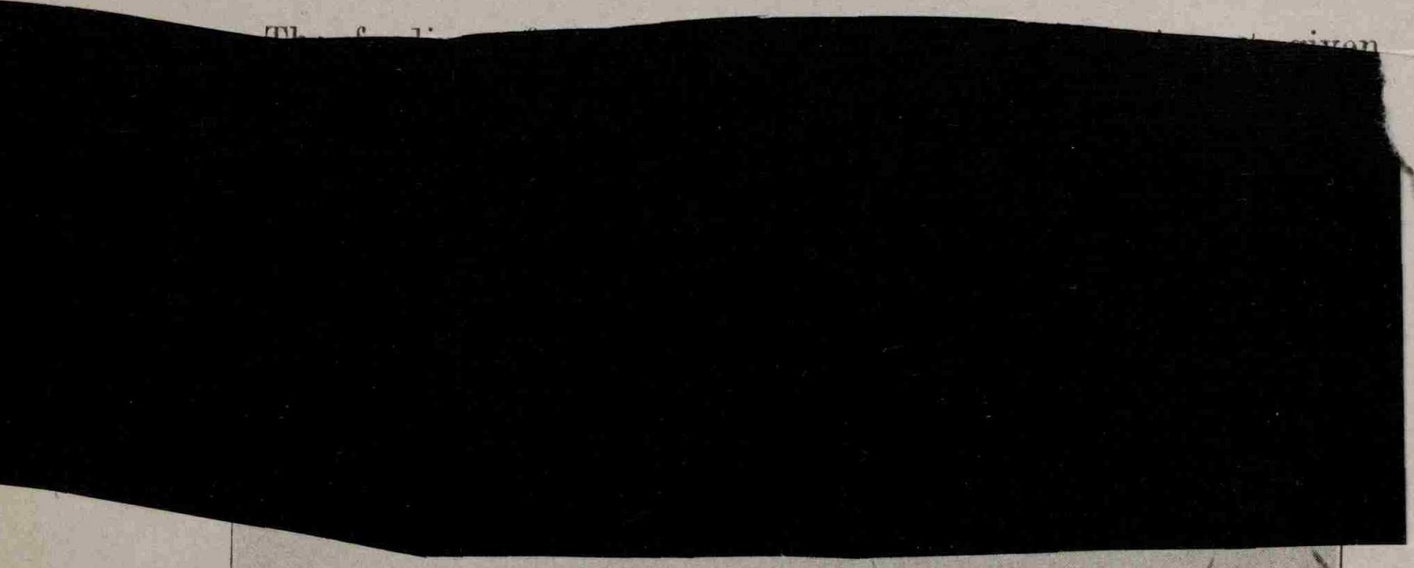
No corn should be planted for seed that has not been tested. There are many different ways of numbering the ears in testing. A rack similar to the one on page 30 is not expensive, and is easily made with 2x4's, with baling wire fastened up with nails, far enough apart so one can lay the ears in evenly. This seed corn tester, for testing individual ears of corn, is one given to the County Agent by Walter Breyfogle and is like several he used in testing. The box is about 3 ft. long, 1 ft. wide, and 3 inches deep. The notches are sawed in on the side and edges of the box about one-third inch deep and 2 inches apart, and the box filled with moistened sawdust up to the bottom of these marks. Heavy wrapping cord is strung crosswise and lengthwise, dividing this off into small squares, large enough to hold 5 or 6 kernels, representing the individual ear of corn. This same tester was used for demonstration at the Teachers' Institutes, and many of the schools throughout the county, showing the actual work. In connection with this we gave the children posters telling them how to test seed corn. As a result the seed corn testing work was taken directly into the homes and corn was tested where it never had been tested before.

PREPARATION OF THE SEED CORN.

A well prepared seed bed is very essential. We can do more effective and efficient work before the grain is planted than we can afterwards, to control weeds. The University of Illinois has found after several years' testing, that the destruction of weeds is of more importance than the conservation of moisture. If any one prepares a good seed bed he will be controlling the moisture, before the corn gets started. Shallow cultivation gives better results than deep cultivation. Go to the corn field and dig down

two or three inches between the corn rows after the corn is eight to sixteen inches high and see the large amount of feeding roots in the surface soil that deep cultivating would destroy. Do not cut these feeders off or you will hurt the crop.

FEEDING THE CORN CROP.



about an abnormal condition. It has unbalanced the phosphate content of the soil; hence, we find it more profitable to use phosphate than potash, even on the muck type. Whenever we have a good leaf or stalk growth, but the grain does not reach maturity, we follow out the application of phosphate; but should we fail to receive a good leaf or stalk growth, then we must look to the nitrogen and potash requirements.

This is the third year we have had field demonstrations with corn on this type of soil, with the different kinds of plant food. The following data will give you a good idea of what is needed to produce a good corn crop in this district.

The upper picture shows potash to my right, and the 10-10 or phosphorus and potash to my left. The lower picture shows nothing on my left, and acid phosphate alone on my right. In 1914 the check on the left gave 48.3 bushels; acid phosphate on the right in the lower picture, 66.12 bushels; 10-10 in the upper picture on the left, 65 bushels, and muriate of potash on my right, 48.75 bushels. We might also add that we gave the same weight and the same credit to the poor corn as we did to the better corn, which is hardly fair, as only the phosphate corn matured, and was of much better quality. In 1915 in another field on the same type of soil where we were using acid phosphate, we were given a sack of "Magic Fertilizer" to show up the acid phosphate. When County Superintendent F. F. Heighway and myself visited this

field during the summer after the corn was about 6 inches high, we found where we applied the acid phosphate, that the corn was three times as high as where we had applied the "Magic" fertilizer. The cut represents this very clearly. This same difference could be seen distinctly 70 rods away all summer. When the frost came the corn that received the acid phosphate was matured, and of a good quality. That where the complete fertilizer was applied never matured and did not grow vigorously all summer. The picture on the next page shows the two grades of corn.

Where we applied 225 pounds of acid phosphate, which cost $1.91, we got a yield of 58 bushels of corn, which at 50 cents a bushel leaves us $27.09 after paying for the plant food. Where we applied 225 pounds complete fertilizer, which cost $3.08, we got a yield of 34.3 bushels of corn, which at 50 cents a bushel, leaves us $14.07 after paying for the plant food. The practical point of most interest to the farmer is that the 58 bushels of corn that was fed with the acid phosphate matured several days earlier, and was a good quality of corn, while that with the complete fertilizer did not mature and the corn was of little value. The corn

was so poor the cows refused to eat it, after the owner decided it was not worth harvesting.

In going to these and similar districts, we found that the right kind and proper amount of plant food is not used to the best advantage by every one. A little figuring will show you from the above date that $13.02 per acre profit from the good corn, over and above the poor corn, ought to convince the average man that there are some things that we can do better than we have been doing. Let us go further as a business proposition. The Purdue Experiment Station says it costs about $12.47 per acre on the average to grow an acre of corn. $14.07 less the cost of raising the crop equals $1.60 profit. The acid phosphate corn $27.09 less $12.47 cost equals $14.62. Or $14.62 less $1.60 equals $13.02 more per acre from good corn, and the quality of corn would not be equalled. We agree that there is nothing compulsory in this matter which would cause any man to adopt these better methods; nevertheless, it is a paying proposition.

We might say further, that these same soils, after being treated

with phosphate for a few years, may need a different treatment because of the fact that as soon as the low phosphate content is raised by several applications of phosphate, then the problem may shift to the nitrogen or the potash proposition. A great many think that there should be a panacea or cure-all for every little ailment that can be applied to the soil at once. These conditions do not exist in this work, and those things can be done gradually and intelligently. It is not practical to put back in one year, that which has been taken from the soil in several years. If we are to keep up or build up the fertility of these soils, do it while they are still yielding a profit.

Some farmers are in the habit of putting a bag of fertilizer with the corn, which serves as a fair tonic, but is not a good practice. The above cut shows to my right where 100 pounds of fertilizer has been applied to the hill at planting time, and on the left 150

When the Frost Came September 15, 1916, the Phosphate Corn Was the Ripest.

pounds was applied in the hill, and the corn was killed. It meant a re-planting of fort-two acres because the owner did not care to take the advice that 150 pounds complete fertilizer was too much to drop in the hill; as a consequence he had a field of low yielding, immature corn that lost him considerable money.

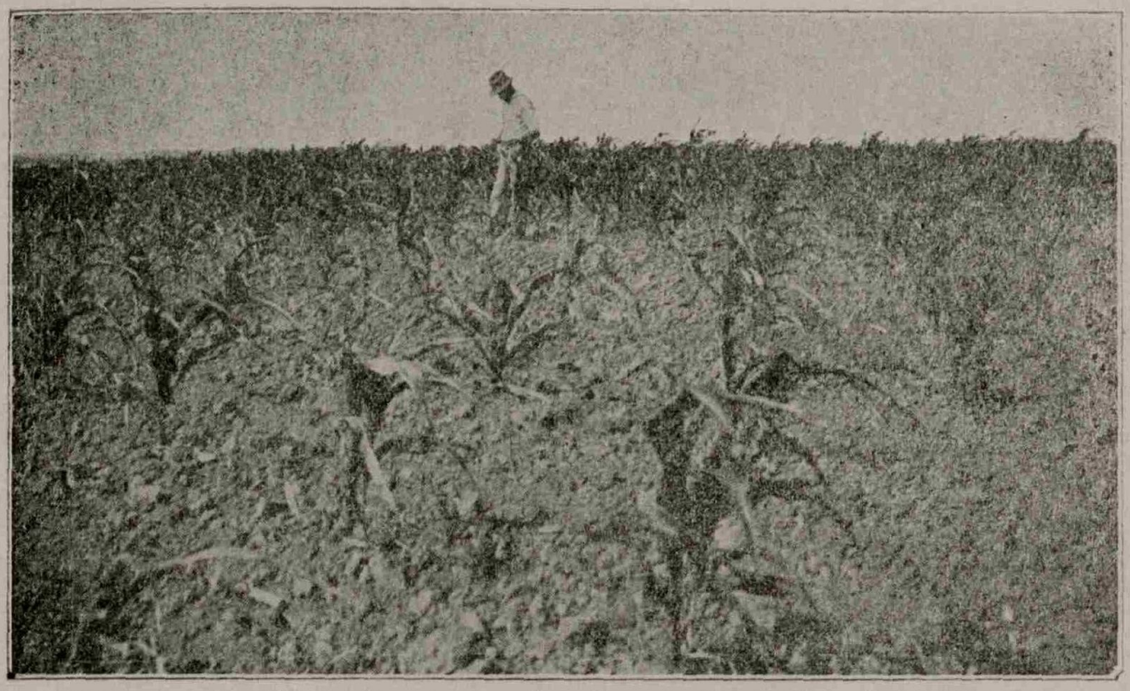
We have tests again this year (1916) on muck soil which shows

potash at the rate of 200 pounds per acre to be about equal with no application of plant food, while phosphorus in combination with nitrogen of potash, or applied in the form of acid phosphate giving us the best growth of corn. This is also true on sandy muck, sandy loam and brown silt loam types of soil.

The muck soils naturally are more or less low in potash. It is not true, however, in all parts of the county. The photograph

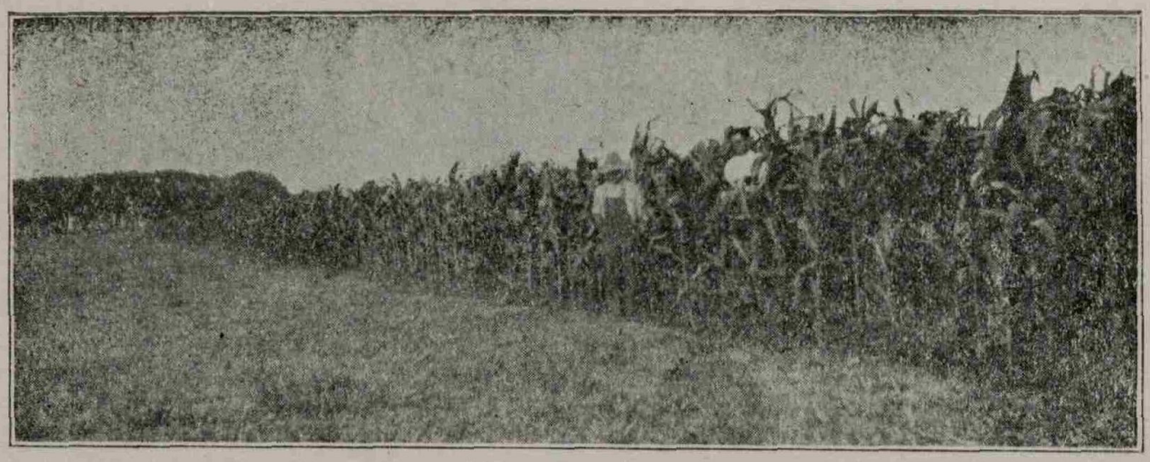
here shows the good results of having potash, and the poor results from using potash in the same field under the same conditions not.

CORN ON TIMOTHY SOD.

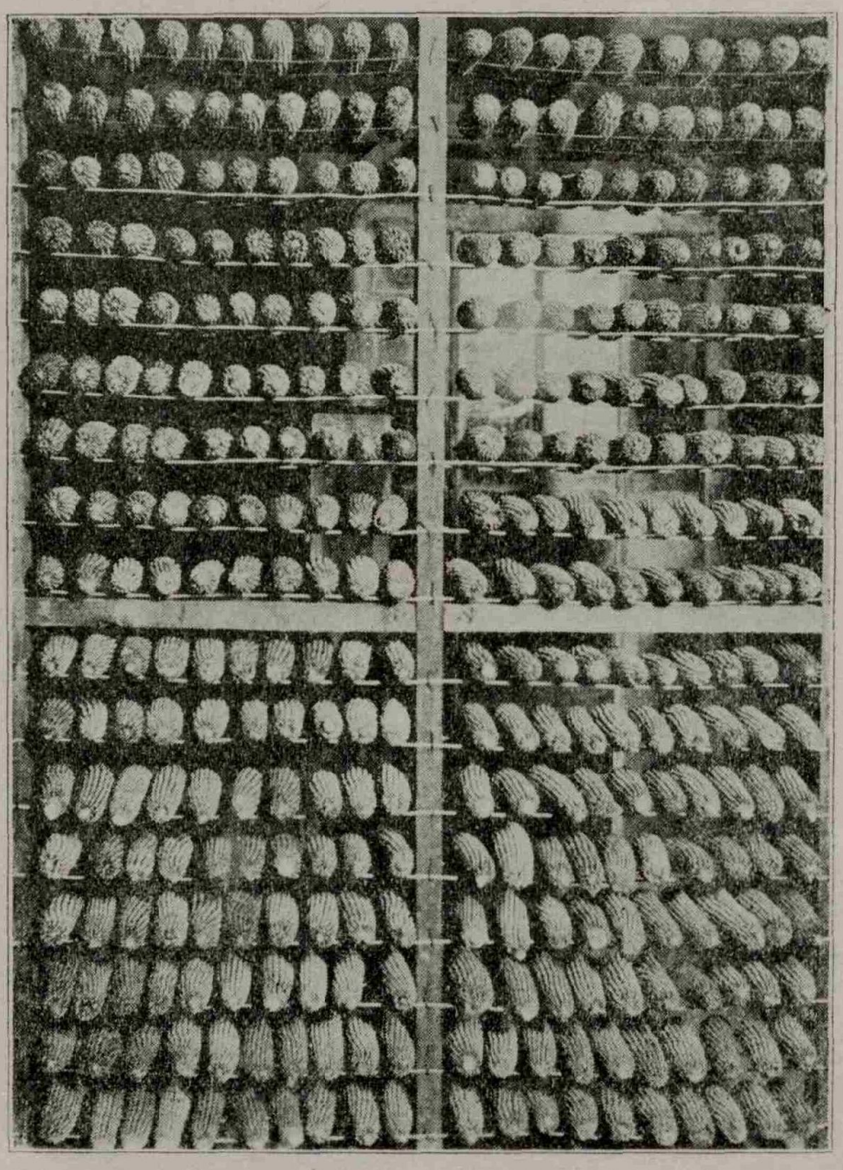


Timothy has had its day in Lake county. The above picture shows a good example of a field of corn on timothy sod that never raised a mature ear of corn that year. When the cause was investigated it was found by pulling up a hill of this corn, that

there were 23 white grubs, larvae of the June bug, working on the fibrous roots of this corn. The next picture shows an acre of corn of one of the boys in the corn club taken the same day, grown on clover sod. A rotation of crops, using clover sod for corn, will help these conditions.



A Boy's Acre of Corn.



A Handy Seed Corn Rack Used When Testing Seed Corn. There Are Twenty Ears in a Row.

The last line on page 28 should read "from not using potash in the same field under the same conditions."

VARIETY CORN TEST.

There are a great number of varieties of corn being grown throughout Lake county, and naturally some are better than others for silage or for producing more bushels to the acre. With this in mind we took nine varieties of corn, all of which are supposed to be the best, and planted ten rows of each kind side by side in the same field. This field had been in alfalfa for five years, broken up, and two crops of corn grown the past two years. This year it was manured before it was planted to corn.

Mr. Krieter prepared the seed bed, and on May 11th, 1915, the writer planted 10 rows of each of these different varieties, and filed a record of the plot in the office. The corn was cultivated and taken care of in the ordinary way. The one who worked in the field did not know there were different kinds until the corn commenced to tassel out.

Numbers 3 and 9 were the first to tassel out, but neither of them made very much stalk growth, and both had more or less of a poor root system. Nos. 4 and 8 were the latest to tassel and ear out, while the others were of a more medium variety. On August 20th we noted that Nos. 1 and 2 were heavily leafed with dark green leaves. No. 3 was somewhat shorter and not so green. No. 4 was medium height, standing well; No. 5 was about the same height, but came up greener and standing good. No. 6 was of medium height and No. 7 was a little taller; No. 8 showed later maturity, and No. 9 was tall and beginning to shoot ears.

August 24th, after we had a wind storm, Nos. 1 and 2 were very green, and standing up good; No. 3 was down badly; No. 4 was not down so very much; No. 5 stood up good and had very large green leaves; No. 6 was of medium height; a little thin, and down. No. 7 down badly; No. 8 not down so badly, and No. 9 was nearly all down.

September 16th Harry Hawkinson, in commenting on the different varieties, said that No. 1 stood up good and was eared well; No. 2 about the same; No. 3 practically all down, lighter green color, and not very well rooted nor eared so well, but somewhat earlier. No. 4 stood good, and had a dark green color, very tall, but late maturity; No. 5 had maturer ears than No. 4, and had a good color, but was not quite so tall; No. 6 had shorter stalks, ears medium, but was down worse; No. 7 was a little taller, short ears, and somewhat tangled; No. 8 was very tall, very high ears, stood up good; No. 9 was down very badly.

September 17th, Fred Krieter said that No. 1 was well eared, with a good growth; No. 2 had a very good growth of stalk, well eared, medium early; No. 3 had a short stalk, ears were low, and the corn was down badly; No. 4 stood up well, not eared very good, and of late maturity; No. 5 was down some, smaller, and lighter green; No. 6 was not as tall as the varieties on either side, and did not stand well; No. 7 was somewhat better matured, but was a big corn, and down some; No. 8 stood up good, very green,

and No. 9 was lighter stalks, down badly; in fact, the next worse in the field, considering No. 3 the worst.

The corn was husked by Mr. Krieter, who weighed it and took samples of the different varieties, on which moisture determinations were made and the yields computed from the percentage of actual corn.

No. 1 yielded 45.34 bushels
No. 2 yielded 54.86 bushels
No. 3 yielded 41.34 bushels
No. 4 yielded 33.00 bushels
No. 5 yielded 40.82 bushels
No. 6 yielded 41.85 bushels
No. 7 yielded 34.30 bushels
No. 8 yielded 48.88 bushels
No. 9 yielded 37.80 bushels

The varieties Nos. 3 and 9, while of early maturity, did not have the best rooting systems. Nos. 4 and 8 would make excellent silage varieties for this county. No. 2 seems to have the ability to make more use of plant food under the same conditions, than the other varieties. While it has been a very unfavorable year, and difficult to mature corn, some good points on practical knowledge can be useful in preparing ourselves to meet such emergencies in the future. There was a difference between the lowest and highest yielding varieties of 21.86 bushels. At 50 cents per bushel this would mean $10.93 more per acre. Almost the cost of raising an acre of corn which is given at $12.47.

1914 FERTILIZER TEST ON CORN.

The fertilizer test on corn shows the most common methods practiced when fertilizer is used at corn planting time. The fertilizer is drilled in the row with a fertilizer attachment to the planter. When the corn is small there is a difference between the fertilized and the unfertilized, but not so much difference when the cost of fertilizer is deducted.

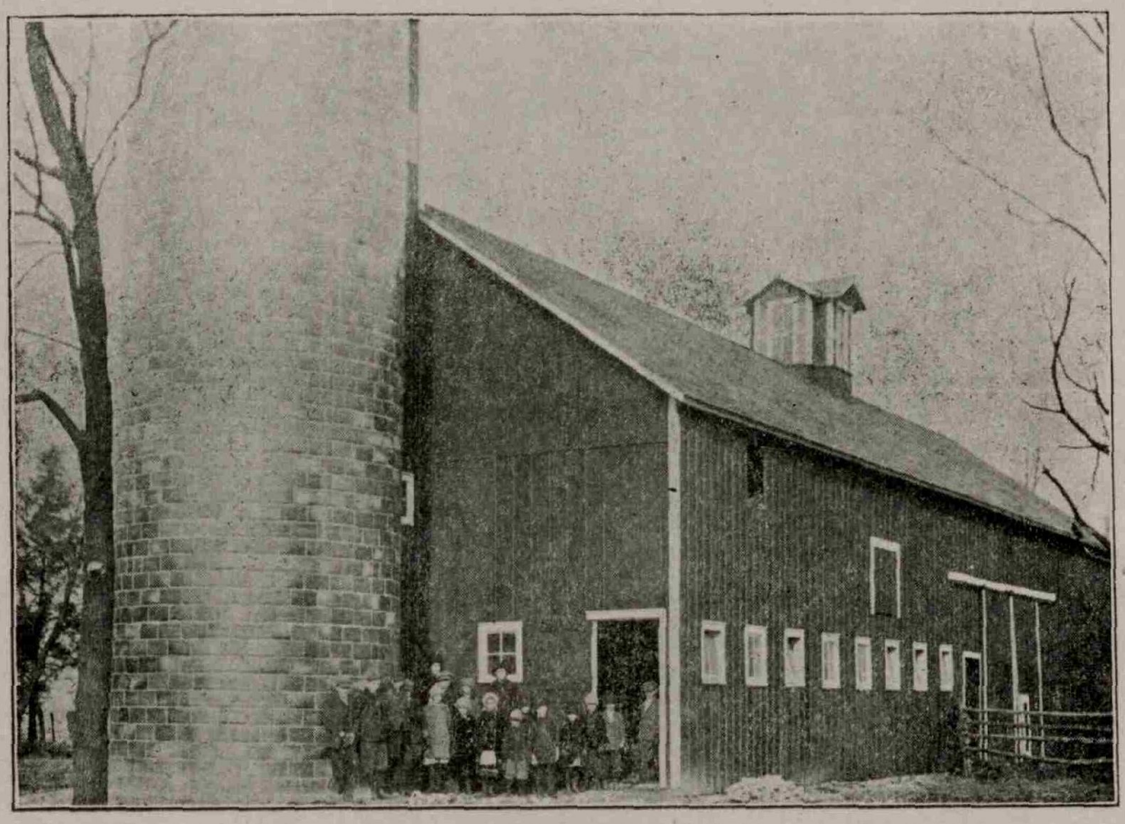
Fred Krieter—3.9 Acres—Turkey Creek,

Rows.	No. Lbs.	Treatment.	Bushels.	Bushels Increase.	Cost of Fertilizer.	Value of Corn.	Profit or Loss.
12		Check	31.3			.50	
12	150	2-8-5	34.2	2.9	1.80	1.45	.35
12	125	10-10	34.7	3.4	1.37	1.70	.33
12	90	1-20-4	34.6	3.3	1.26	1.65	.39
12	100	KCL	35.7	4.4	2.25	2.20	.05

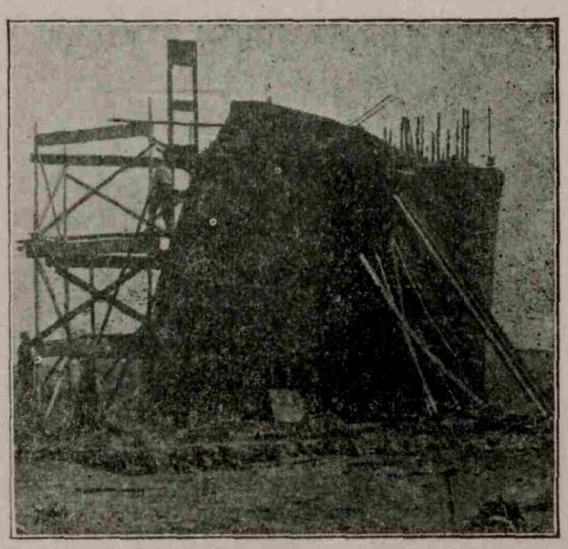
The above method is not advised unless it is supplemented with further treatment of 1000 to 2000 rock phosphate on clover, green cover crop, or about 8 loads of manure per acre in a rotation of crops.

Silos.

The number of silos in Lake county in 1913 was recorded as 227. At the end of 1915 the writer had checked up the owners of 654 silos in Lake county. The present statistics show Lake county with 702, the greatest number of silos in any county in the State. There are several different kinds and makes of silos, and the permanent silo is not one to be laughed at. Any silo that keeps out the air, and in which you can pack the green succulent feed compactly, will answer the purpose. The better silo we build as a general thing, the better progress we are making. We show a



modern silo, and also a remodeled dairy barn, which is being visited by the County Agent, teacher and children from a neighborhood school. The smaller cut of the leaning "Tower of Pisa" shows the ruins after a fire had destroyed all the buildings, as well as the wooden silos. The new silos were erected the week following the fire, and the silage transferred into them. It was cut finer and tramped solid, which resulted in as good a grade of silage as the owner ever fed, and the stock liked it. The writer had occasion to see another case of fire the same month in which a



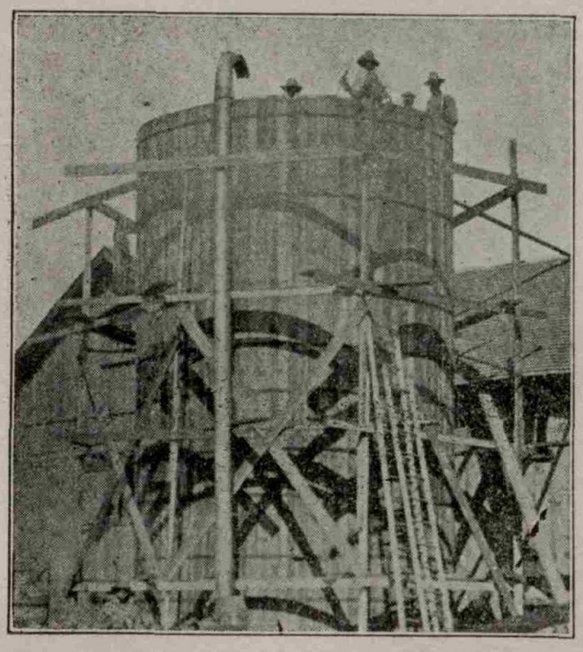
permanent silo was the only thing left standing in the barnyard, and it was full of good succulent feed. We have all kinds of silos in the county, and they are all good, and are to be recommended, but some answer the purpose better than others, under the different conditions with different people.

KINDS OF SILAGE.

Corn makes one of the best succulent feeds that we have, although we have used alfalfa and clover to good advantage. The first crop of alfalfa was put in the silo and made excellent silage.

Cutting a Day Ahead Saves Labor.

However, alfalfa is worth more as hay than silage if it can be cured. One of the cheaper and better methods of cutting silage is with the corn binder and a little head work with exchange of work with the neighbors. The cutters can keep a little in advance of the silo fillers, which keeps down the cost of extra labor. In filling the silo, regardless of the make, it is necessary for best results to have the silage well tramped.



Tramping It Solid.

This picture shows four men who are tramping the edges of the silo, as well as keeping it level, which will more than offset the expense of extra work in silo filling. If there is any one place where extra help is needed it is inside of the silo rather than on the outside. It is cheaper to have this expense in proper filling than the extra loss of losing stock that is fed mouldy or poor silage. Good silage may be fed with safety to all classes of live stock.

Oats.

A Real Demonstration—Five tons Limestone Gave 47.3 Bushels of Oats, Five Tons Limestone and One Ton of Raw Rock Phosphate 104.0 Bushels. The Picture Tells the Story.

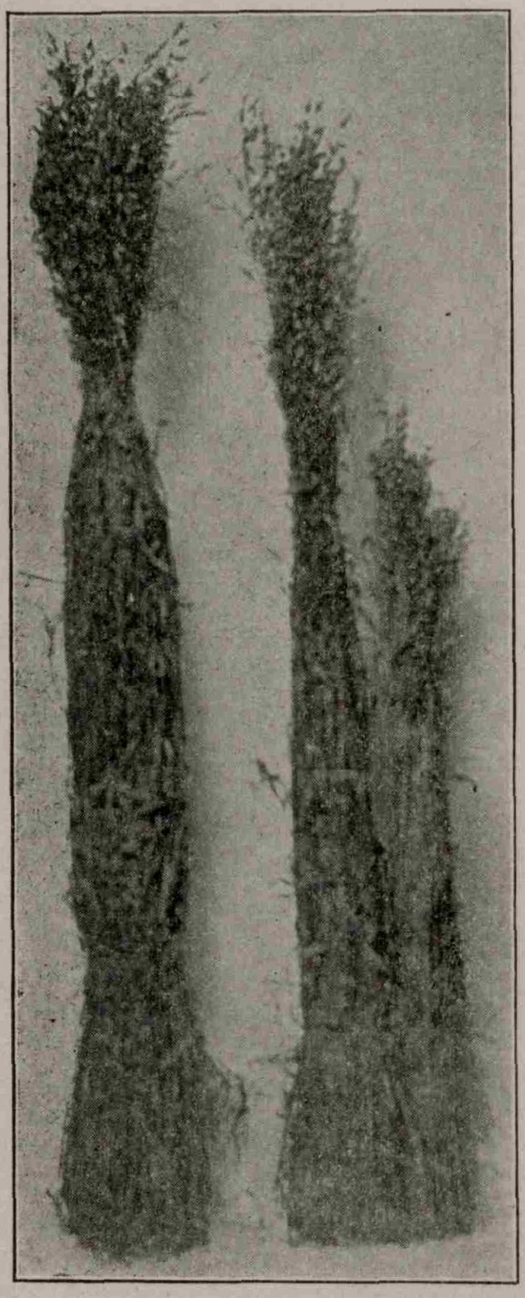
OATS SMUT CAMPAIGN.

Very few oats were treated for smut in this county prior to 1914. Enough oats were treated during that year to create interest. In 1915 the County Agent spent 32 days conducting a campaign through the schools and farmers' meetings on how to control oats smut. As a result we found there were over one-third of the total acreage of oats treated for smut that year, which made a saving to the county of over $97,000 for the crop. We found from a visit of 113 farms that oats that were not treated averaged 21.1 per cent. smut, and from 74 farms that were treated, there was an average of .0011 per cent. smut. We found further that on the average of 1 per cent. there was a loss of 1.1 bushel of grain. We regret that we were not able from lack of time to visit all the farms and give credit to all parties who treated oats. These were actual demonstrations and not estimates.

TREATMENT.

We used one pint of formaldehyde to 30 gallons of water. After the oats had been cleaned and graded, one or two shoveled the oats over and over while one sprinkled on the solution, until the oats were thoroughly dampened and mixed; then they were covered over with clean sacks, canvas, or blankets, and left covered

for two hours to retain the gas, or in the majority of cases, left covered over night and the next morning spread out to dry. We had a great many who used stronger solutions, and many more who used weaker, but 1-30 was used generally. It is a good plan to treat the oat bins, sacks, or seeders that have contained smutty oats before putting the treated oats into them. Open the seeder or drill to sow more when the grain is damp and swollen. Oat smut matures a little earlier than the oat crop as a general thing, and when one cuts the oats the smut is hidden from view, and is seldom noticed. The accompanying picture shows treated oats on the left and untreated oats on the right, which are all cut from the same fractional part of an acre. That on the left had no smut at all, while that on the right had 21.1 per cent. smut. Notice the difference in the height of the smut straw, and the treated oats, which are a little taller and more vigorous. Formaldehyde of the 40 per cent. strength can be purchased for an average price at 30 cents per pint, so that the cost of treating need not exceed more than three cents per acre.



This year we find that a great many used less water, or one pint formaldehyde to 15 gallons of water. This treats from 35 to 40 bushels of oats. The writer has visited the fields personally and has not found a head of smut. Trustee Alfred Schmal of Hanover township has used the strong treatment for two years with a number of others and they have obtained the best results.

TREATMENT 1916.

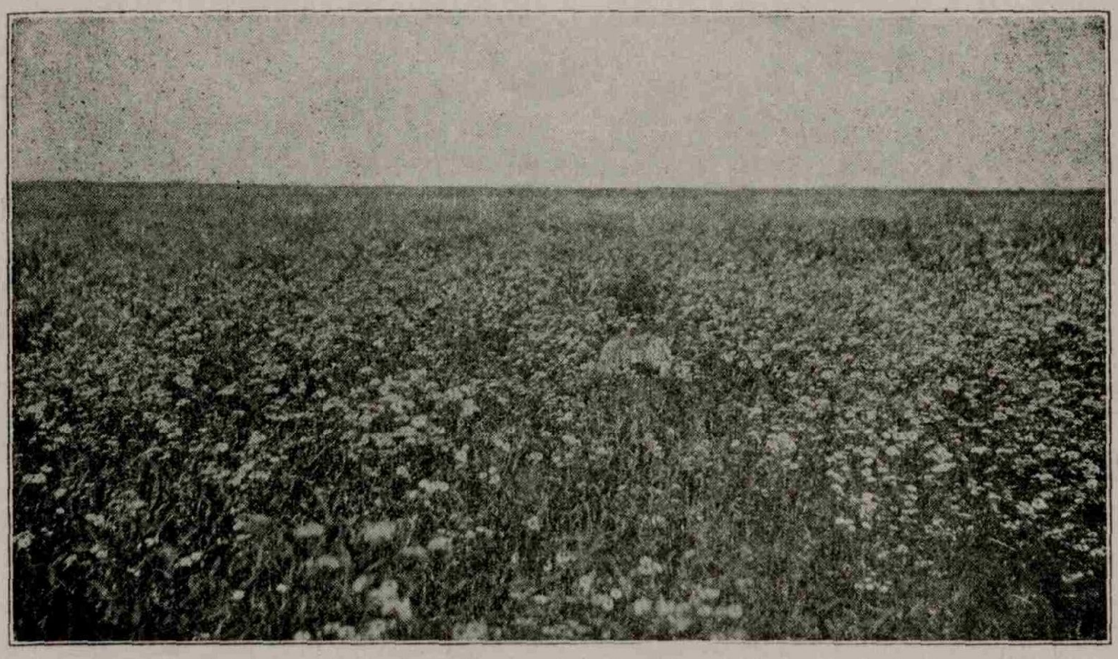
The Sporocide people, who use formaldehyde as a basis for their preparation use small amounts of water. Why not, when the gas does the work?

We have many practical farmers who have made a success with the stronger treatment. We will use one pint of formaldehyde to 20 gallons of water for about 40 bushels of oats another year.

We are also pleased to report that over 95 per cent. of the total

acreage of oats grown in this county this year were treated and we had excellent results. The three cents cost per acre for treating is very cheap insurance. No one can afford to sow oats without treating.

NEIGHBOR FIELDS.



The Oats Were Disced in This Field. The White Daisy Decreased the Yield 20 Per Cent.

This Field Was Plowed and Had Oats and Not Weeds to Use Plant Food.

SEEDING OATS.

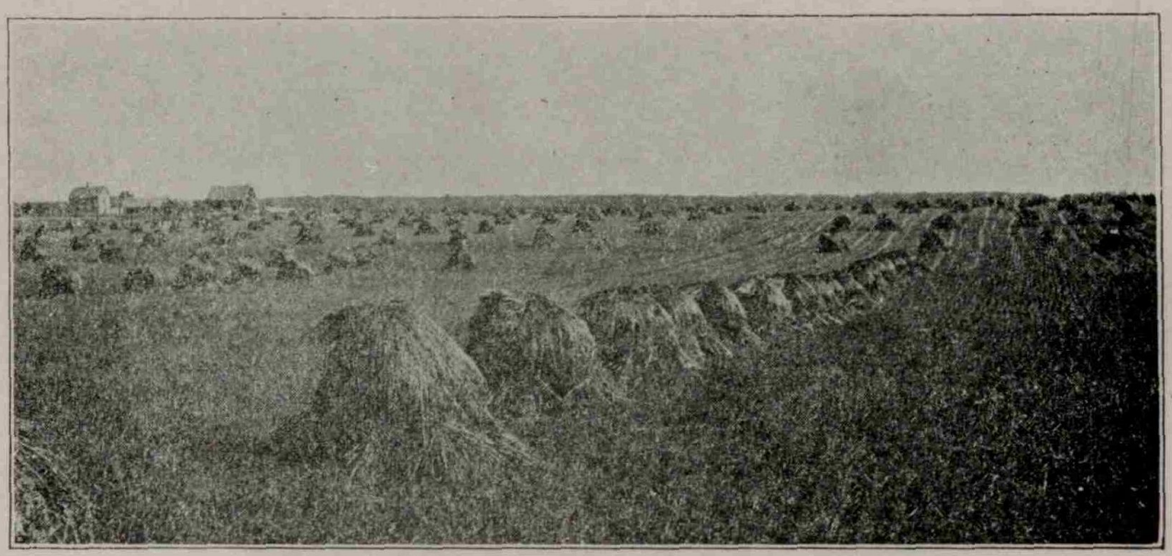
The preparation of a good seed bed is very essential, and weedy land should be plowed; land that is not weedy can be disked and drilled. For several years average, drilling has given a better

yield than broadcasting, and besides taking a less number of bushels of seed per acre—it is all planted at a uniform depth. In broadcasting oats it requires more seed because some are never covered up; some covered too shallow; others too deep. Rolling

oats is a good practice if done at the right time. The picture where oats are being rolled shows them over knee high and jointed. In this particular case it was a good thing to roll the oats down because it saved the clover which turned out to be one of the best fields in the county in 1914. In 1915 we rolled our oats a little earlier wherever there were indications of them going down, and we found that the rolled oats stood up during the bad weather very much better than those that were not rolled.

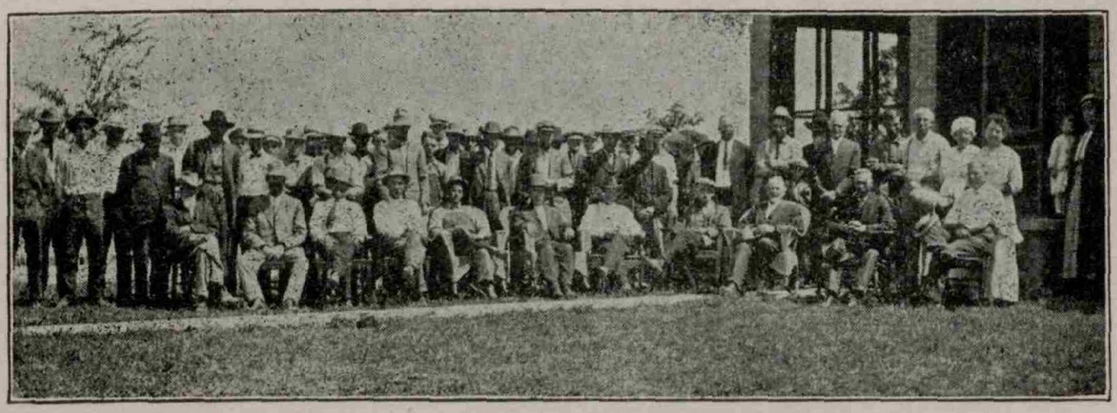
GOOD SHOCKING.

After the crop has grown it is just as important to have it well shocked as it is to cut it. This picture has two good features at



least; one that the oats were drilled and the second that they were properly shocked. The writer admits that this is the best field of shocked oats he saw in the county during the past two years. Mr. Schwenke is entitled to the credit.

Wheat.



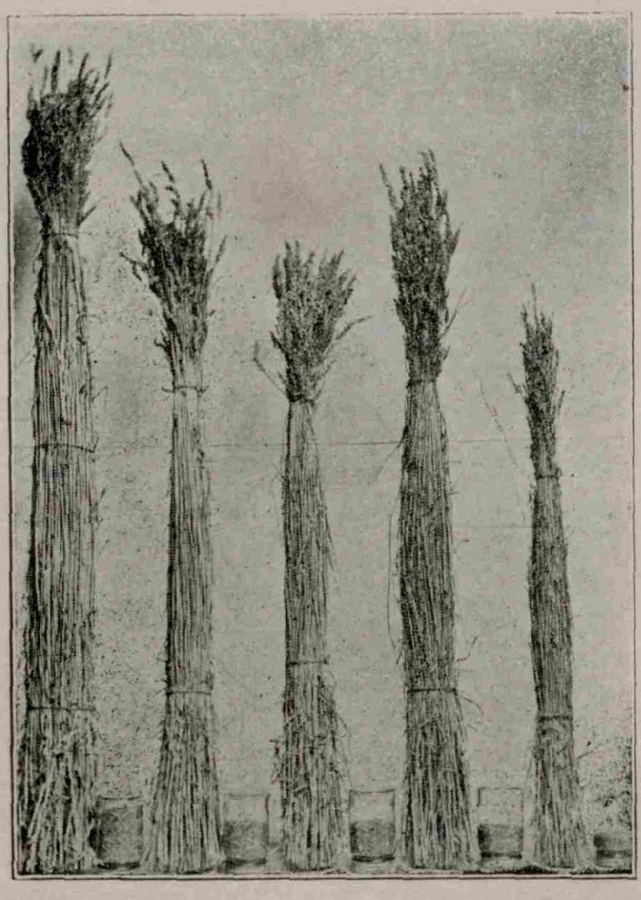
Wheat Demonstration Meeting.

When it comes to doing justice to the wheat crop, we have to take off our hats to Sauerman Bros., Crown Point, who have raised and shown time and again the best wheat in the state. They have also taken first prizes at other state shows.

West Creek township has the honor of producing the highest yields and most acres of wheat in the county. In 1915 in spite of the wet season, the Baileys received an average of 43 bushels from 126 acres. This is a new soil, and shows the good of having plenty of plant food.

PRACTICAL TESTS WITH WHEAT AND CLOVER.

The preparation of the seed bed so far as the mechanical labor



was concerned was the same, and the field an old one that has been farmed for years. This picture shows the yield from the same

number of square feet harvested from the same field with the different treatments.

That to the right which received no treatment produced 20.3 bushels of wheat and1.06 tons of straw. No. 2 which was planted in the same manner was top-dressed with 8 loads of manure during the winter, and produced 29.2 bushels of wheat and 2.2 tons of straw. No. 3 received 150 pounds of acid phosphate applied at the time of sowing, and yielded 38 bushels of wheat and 1.4 tons of straw. No. 4 had 150 pounds acid phosphate applied at the time of sowing and top-dressed with 8 loads of manure during the winter, and gave a yield of 40.3 bushels of wheat and 2.3 tons of straw. No. 5 had about 8 loads of manure plowed under, 150 pounds acid phosphate applied at the time of sowing, and 8 loads of manure put on as a top dressing during the winter, and yielded 55.76 bushels of wheat and 3.8 tons of straw.

RESULTS OF GOOD TREATMENT.

The practical part in this wheat demonstration is that we received 20.3 bushels of wheat and 1.06 tons of straw with just a good preparation of the seed bed and the sowing of good wheat. All the rest of these plots were treated the same way, except that Nos. 2, 3, 4 and 5 had an extra treatment as above mentioned. You will note that No. 2 produced 8.9 bushels more wheat, and 1.14 tons more straw by the application of 8 loads of manure, while No. 5 produced 8.8 bushels more wheat than No. 2, but .8 of a ton less straw. The practical point we wish to bring out here is that phosphate makes grain, and not straw. In No. 4 with the combination of phosphate and manure we got 20 bushels more wheat than we did with the check, but only .1 of a ton more straw than we did with the manure alone, or we got 11.1 bushels more wheat with phosphate and manure, and only .1 of a ton more straw with phosphate and manure.

DIFFERENCE IN YIELD OF CLOVER.

This whole field, which included all these plots, was seeded to clover last March. September 10th, cutting nine square feet from each plot, we secured the following amounts of green clover: No.

1 with no treatment, 4 oz; No. 2 with the application of manure, 12 oz; No. 3 with the application of phosphate, 20 oz. No. 4 with the application of phosphorus and manure, 28 oz, and No. 5 with the application of manure, phosphorus and manure, 56 oz.

Judging from the surrounding conditions throughout the county, our clover has been failing without an application of

manure or phosphate. This is a good indication as to what is the proper move to take to secure a better stand of clover and better yields. Or we say, No. 1 represents a grain farmer's system of farming, and No. 2 represents a live stock farmers' system of farming, and No. 3 shows what could be done with phosphate on this grain soil, and No. 4 what the live stock farmer can do by adding phosphate to manure to make up a complete plant-food, and No. 5 what science teaches us in connection with these other methods of farming.

SUGGESTED METHODS.

Using this as a basis it is advisable to advocate the use of at least 150 pounds of acid phosphate to be sown with the wheat in the fall, and some time during the winter make an application of a thousand pounds per acre of a high grade of finely ground rock phosphate. Early next spring seed those fields to clover and in 1917 harvest the first crop of clover, and either turn the second one under or feed it and return the manure to the land. For the farmer who wishes to grow seed, clip the first crop and take seed from the second crop, and return the chaff to the land. The next year can be followed with corn and the next year wheat, coming back to the clover rotation, unless some prefer to put in the four year rotation, either using corn, corn wheat and clover, or using corn, oats, wheat and clover.

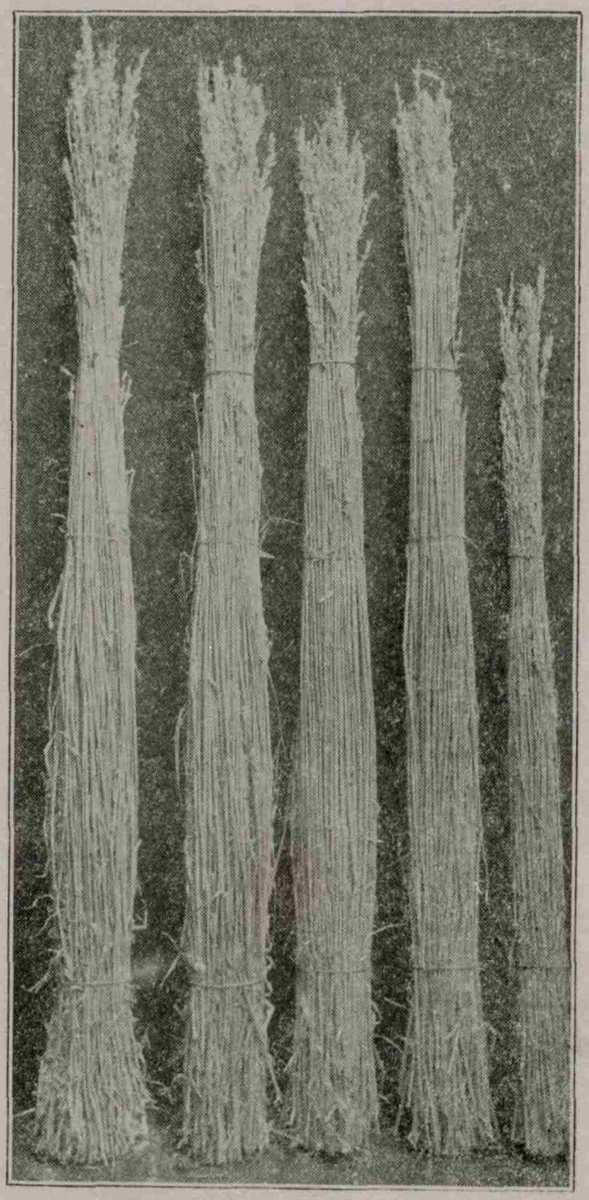
HOW FEEDING THE CROP PAYS.

We aim to use acid phosphate with the wheat, and sow the last of September in Lake county, to escape the Hessian fly, and to give the wheat a strong, vigorous constitution to withstand the winter. We aim to get enough extra yield from the treatment of acid phosphate to not only pay for its use, which will be about $1.50 per acre, but also the $3.50 per acre for the application of 1000 pounds of rock phosphate. The total is $5.00 per acre, which will be paid for with an increase of five bushels more wheat at $1.00 per bushel. This is a good practice for all wheat growers to take up at this time. Not only that, but at the end of four years with this system, which might be repeated with rock phosphate alone instead of acid phosphate, we will have a richer and better soil, and will be establishing a more permanent system of agriculture, which will mean better farms, better homes, better roads, better schools, and a better class of people.

WHEAT YIELD IN 1916.

Last year we had some practical tests of wheat and clover which were conducted in this county that gave us some valuable information. This year was not as good a wheat year as last, owing to the fact that the fields were not as well prepared last fall following the extremely wet season of 1915, and the winter being more severe. The wheat field cracked so badly this spring that we harrowed the field twice. The clover did not do anything where there was no phosphorus or manure, and you can see to a line where they were applied. However, we found the same preparation of the seed bed in the same field gave the following re-

sults with the different plant food treatments. The same number of square feet representing the same fractional part of an acre is represented in each test. That to the right which received no treatment produced 13.1 bushels of wheat and .64 tons of straw. No. 2, which was top-dressed with eight loads of manure during the winter, produced 19.2 bushels of wheat and 1.06 tons of straw. No. 3, which received 150 pounds of acid phosphate at the time of sowing, yielded 25.7 bushels of wheat and 1.16 tons of straw.



No. 4, which had 150 pounds of acid phosphate applied at the time of sowing, and was top-dressed with eight loads of manure during the winter, gave a yield of 29.75 bushels of wheat and 1.35 tons of straw. We were not able on this field to plow under manure, so we do not have that test in comparison with the 1915 yield, but on another field where the land was so poor that the crop was not harvested last year, we applied one thousand pounds of rock phosphate per acre and plowed it under and top-dressed the surface soil with a little over 5 tons of ground limestone per acre. No. 5, which represents that, gave a yield of 31 bushels of wheat and 1.7 tons of straw per acre. The conclusions we believe can be based along with the conclusions of last year's test.

Red Clover.

Red clover ordinarily grows well on soil that is not in fairly good condition, but we find very little red clover grown in the county up to 1916. Some places the land is too sour or acid; the

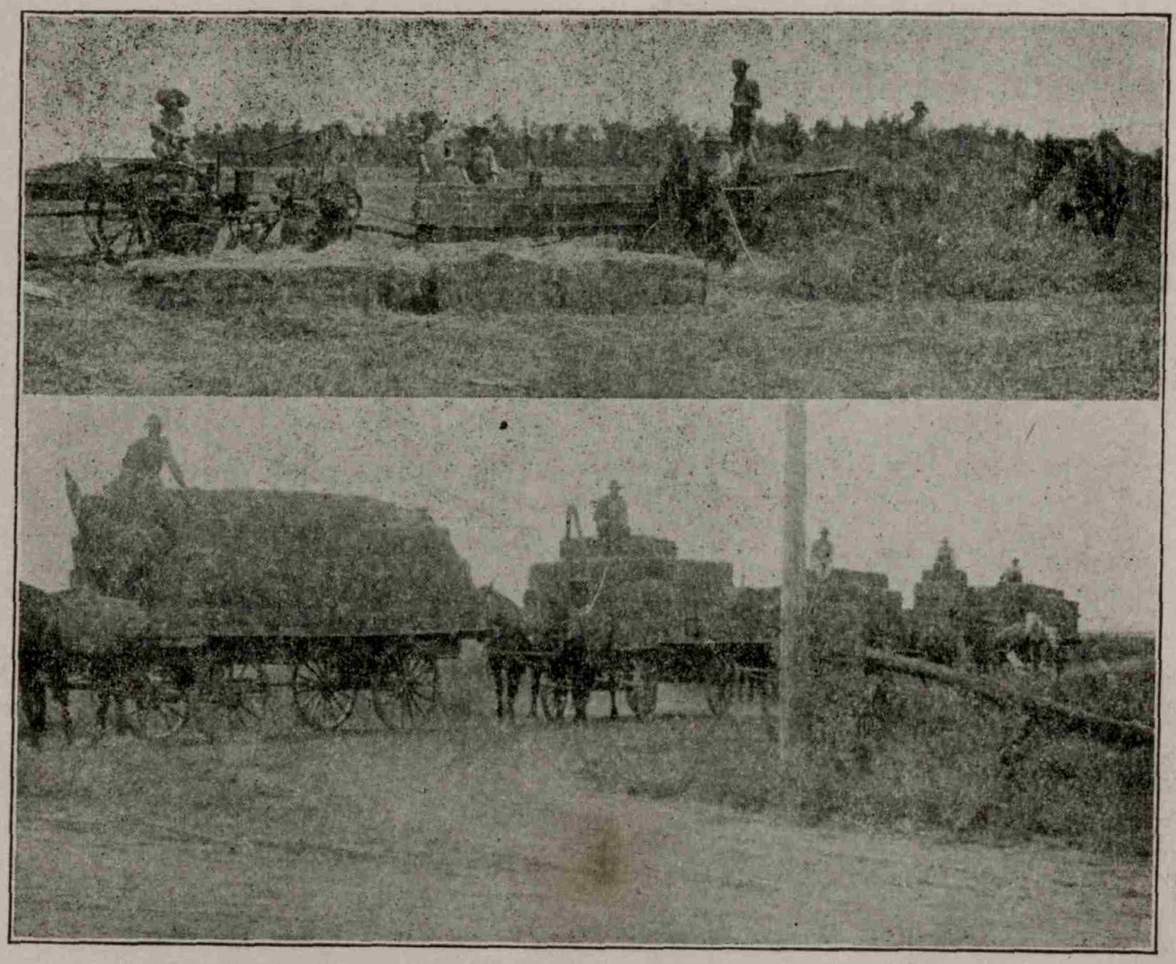
fertility is too low, or, it is easier to grow timothy. The above picture shows the late C. E. Smith, who was secretary of the Lake County Holstein Breeders' Association, and also of the Northwestern Cow Testing Association, in his seed crop of clover in the fall of 1914. Clover hay is a valuable feed, being equal to alfalfa when fed with silage, unless grain is fed. Some of the old worn hills on farms in the county would grow clover again if there was any available plant food in the soil. The accompanying picture

Knee Deep in Clover On Hill Where Nothing Grew a Few Years Ago.

shows a growth of clover that was seeded in oats, and is on one of these old worn out hills that was manured and fertilized. Where manure or plant food is lacking we find no clover growing. Alsike clover is preferable on poorly drained soil.

Timothy.

The raising of timothy hay was one of the main crops in this county for a number of years, and is at the present time in too many places for the good of the county. We notice in the picture the easy way of robbing the soil is by cutting the hay and pushing



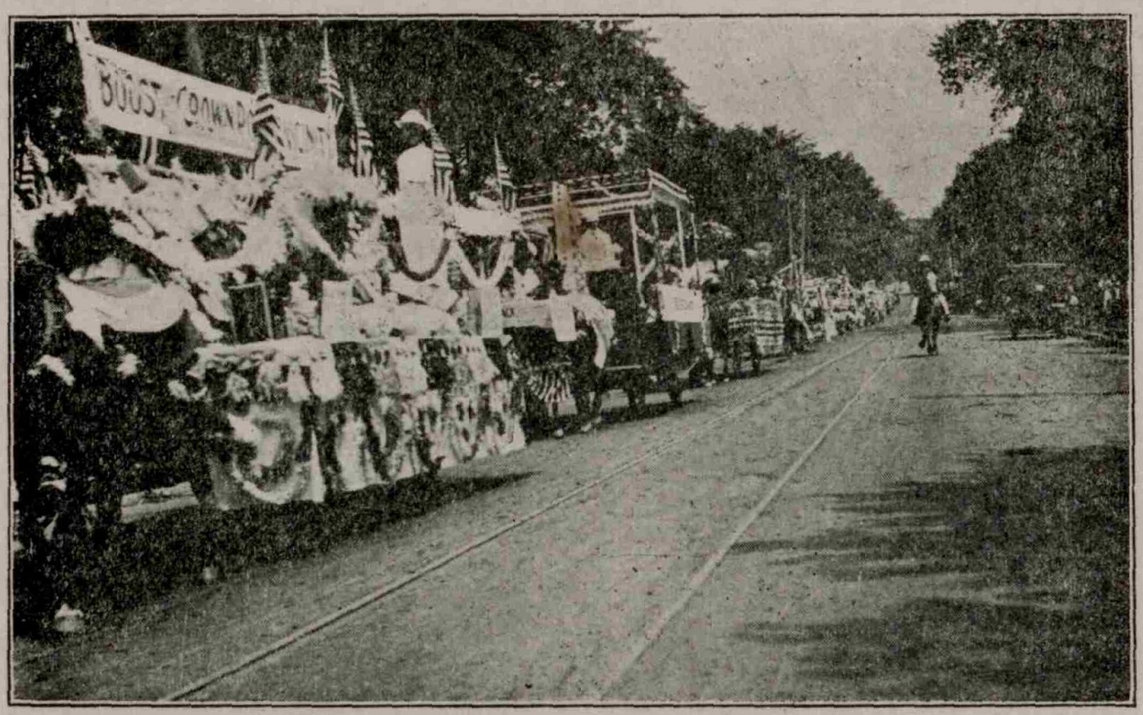
Baling the New Hay From the Field and Hauling the Fertility of the Soil Away to Market.

it up to the hay press with a push rake, so it can be pressed immediately and hauled away to the market. It is one of the lines of least resistance in farming. Where there is so little trouble in connection with the work, and where this has been practiced for so many years, we find many farms carrying out the practice of robbing the fertility from the soil. They do not like to grow alfalfa because it keeps them cutting it all the time. If the reader will keep in mind the pictures shown where corn is growing on timothy sod, he will also see that it did not take very much work to harvest that corn after the white grubs had performed their work. Also, compare this with further information which will be given later in regard to other crops that are grown for forage. The writer does not mean to say that timothy hay is to be abandoned entirely, but wants to impress upon your mind that there is too much timothy being grown, and not enough clover, alfalfa

and other legumes for the good of the future of the soils and the prosperity of the county.

We found the average yield of timothy in 1915 less than two tons per acre and alfalfa more than double this yield. Further we found that alfalfa could be cured during the wet season in much better shape than timothy or even clover. This year, 1916, we found that the highest yields of timothy were 2.5 tons per acre, and the low yields .9 of a ton. We also found the second cutting of alfalfa in many places average 1.7 tons per acre. New alfalfa hay can be sold at the present time at $15.00 per ton, or $25.50 per acre for the second cutting. The hay buyers are offering six and eight dollars a ton for timothy, but even at $10.00 per ton the highest yields of timothy would only equal the second crop of alfalfa. If we only received a ton each from the first and third cuttings of alfalfa, we would still have better than $25.00 per acre more from alfalfa than timothy.

We cannot afford to continue to grow so much timothy in this county, sell it from the land and expect to keep up the fertility of the soil. When the timothy crop is cut from the fields during the hot season of the year, there is no green crop coming back at once to protect the soil. In case of clover or alfalfa, we find we not only have a new crop coming on to protect the soil, but one that has the power to take free nitrogen from the air.



The Above Picture Shows the Effect of a Fourth of July Parade to "Boost" Crown Point and Vicinity.

Every part of Lake County should boost alfalfa to replace timothy for feeding more live stock.

In this system of farming we could get a better rotation of crops and feed the fertility of the crops to the live stock, so that the manure could be used to build up the soil.

Alfalfa.

In 1914 we only had 52 acres of alfalfa in the county that was growing successfully or unsuccessfully. In the fall of 1916 we had 413 acres in the county. The same practices that would grow good

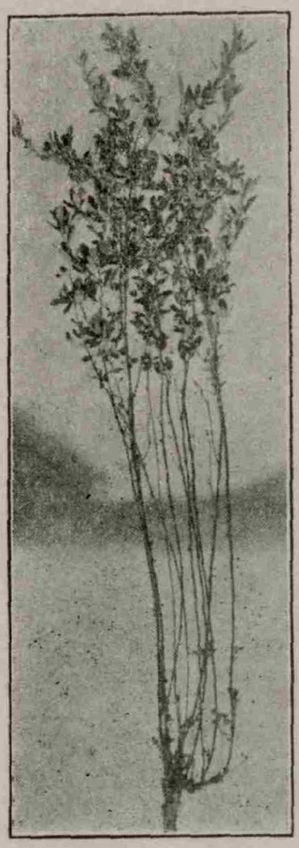
Potatoes On Alfalfa Sod and Alfalfa in the Hay-Cock.

alfalfa would grow other legumes equally as well, if not better. We need a well drained soil, a well prepared seed bed containing enough lime to not only correct the acidity of the soil, but supply

Second Cutting 1916—Three Feet High.

ing the growing crops plenty of available plant food, inoculated soil and good seed. Seeding can be done in early spring with a light nurse crop, say 3 pecks of barley or 4 or 5 pecks of oats, which

should be cut for hay before the grain matures. If the summer fallowing system is practiced, the seed should be sowed about the first of August, whenever the soil can be prepared in the best shape or manner. We have good results from covering the alfalfa fields with a light covering of strawy manure in winter, to prevent freezing and thawing of surface soil which injures the roots. Hall & Love had the best second cutting of alfalfa in the county in 1916, where they used lime, rock phosphate and manure on a thin, poor hill top.



TIME OF CUTTING

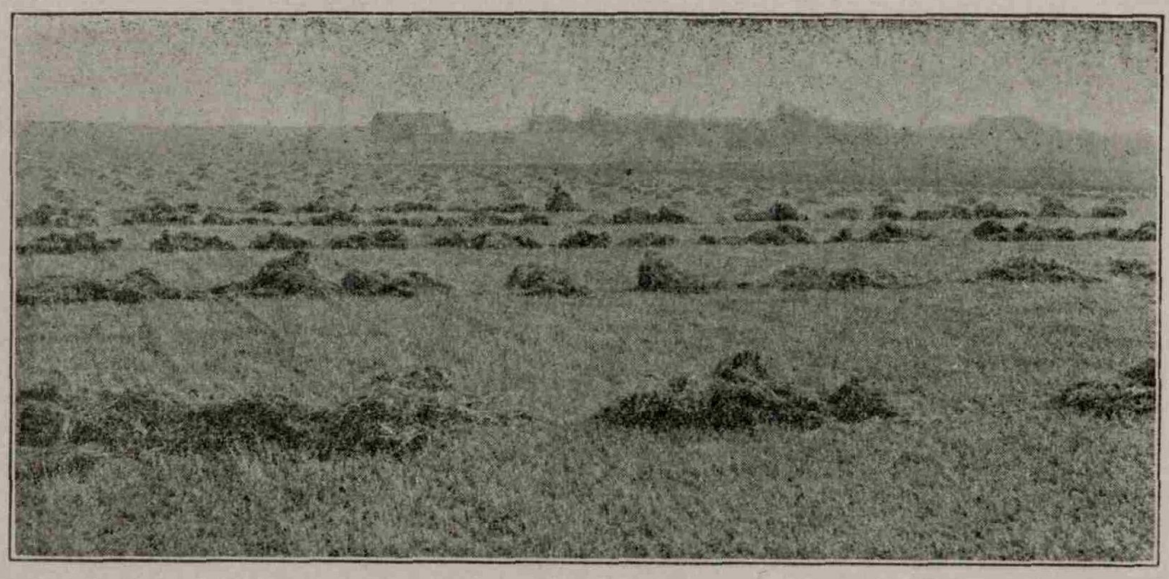
Too long have the theorists told us to cut the alfalfa for hay when the blossoms came out. This is theory and does not work in practice in this county. We must follow the growth of the buds or sprouts that start from the crown as our guide.

This cut shows the alfalfa that was not cut at the right time. In this latitude we should not pay any attention to the blossoms as an indication of the proper time to cut the crop. This illustrates very clearly what happens if the alfalfa is not cut on time. You can see these little sprouts of the next crop are as much as 6 inches high. In order to encourage the growth of this following crop, nature has caused the leaves on the preceding crop to fall to the ground to let in the sunshine. It would make little difference how this hay was handled when cut in this stage, you could not save the leaves. Practical demonstrations in the county proves to us that alfalfa cut at the proper time gives a better showing of retaining the leaves, which have about 65 per cent. of the plant food value.

METHOD OF HANDLING THE CROP.

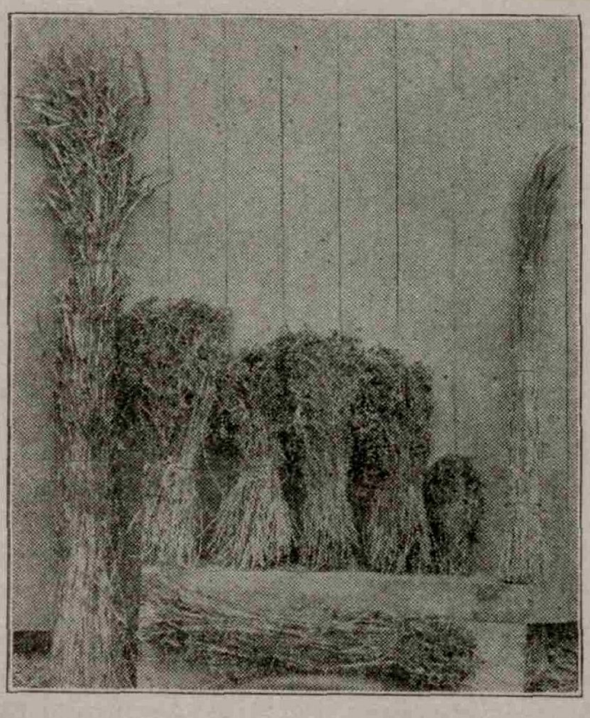
The better method of handling the hay crop on a large scale is to cut the hay when the dew is off, and if it becomes well wilted during the day, side-deliver it into winrows before evening. This can be left in winrows for a few days until it is dry enough to turn, and turn again with a side-delivery rake before hauling to the barn. If the weather is rainy do not bother the hay, leave it alone. You can cure it quicker this way than by the hay cock method. If you only have a small patch you may put it in the small hay cocks that are narrow and high. Do not try to cure it as timothy or you will fail in the attempt. All the alfalfa hay raised in this county can find a ready market among the dairymen, so we do not need to be so particular about the color of the hay. Feeding demonstrations do not prove that pea-green hay gives any better results than the brown cured hay. This past year

we had one demonstration where the hay was stacked when it was green and damp, and it got so hot that it cooked in the stack. This was a brown charred mass that was eaten with a relish by the cows and gave good results. This cut shows the spreading out



The Best Farmers Grow Alfalfa for Feed.

of the hay after it had been in hay cocks for about five days, and what little moisture was present was evaported within an hour or so. This method holds the next crop back under the hay cocks. Some of our most practical dairymen put the first crop of alfalfa in the silo, owing to the continued wet weather the past year, and did not find that there was any particular difference in feeding value between alfalfa and corn silage. We believe, however, that alfalfa is more valuable for hay than it is for silage, owing to the difference in price. Feeding demonstrations have also proved alfalfa to be practically equal to wheat bran, pound for pound, in feeding value. The cut shows the comparative growth of timothy, clover, alfalfa and Sudan grass from the same fractional part of an acre.



Timothy represents 2.2 tons to the acre; clover represents 3.6 tons; alfalfa with 5 different cuttings, 6.4 tons, and Sudan grass shows one of two cuttings from the same part of the acre. It should not take very much talk to convince a man of the comparative value of timothy and these other crops. Neither should there be much argument as whether to grow alfalfa or clover for feeding purposes. Alfalfa is practically equal to red clover in feeding value, and we can

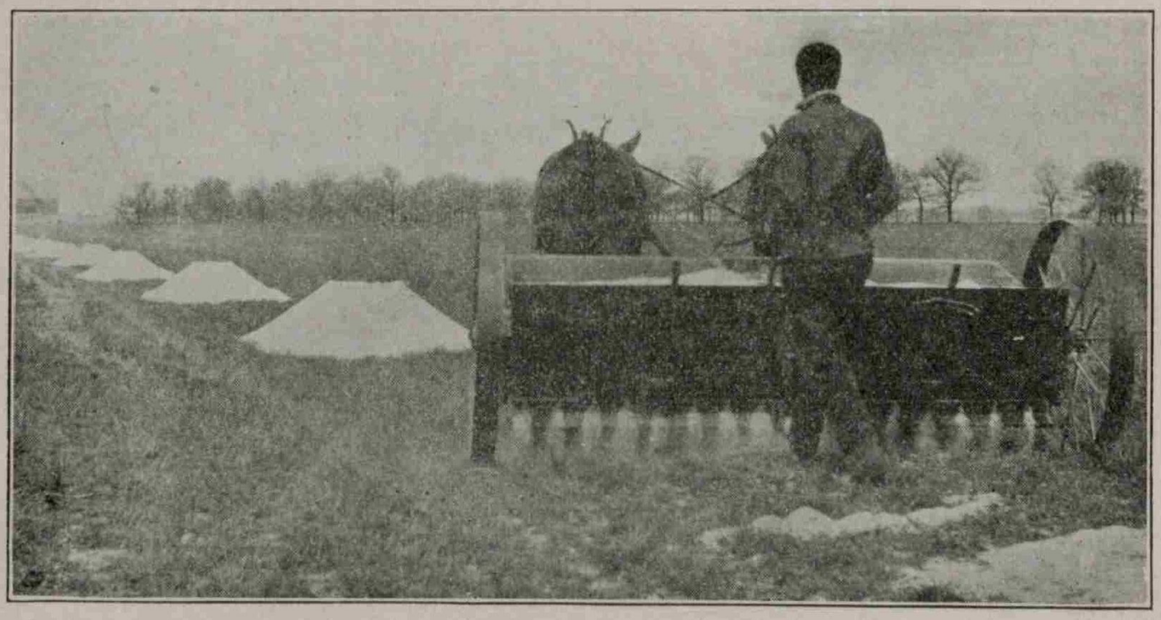
grow on the average about twice as much per acre. This is not a question of arguing, but a question of doing. One ton of alfalfa is practically equal to one ton of wheat bran in feeding dairy cows, and if the bran costs $25.00 per ton, it takes one acre of 50 bushels corn at 50 cents a bushel to buy one ton of bran. Would it not be good business to raise one acre of alfalfa, which would be equal to at least 4 acres of corn, on the same money basis? Also, alfalfa is a better crop to raise in the improvement of the soil than corn, but not to take the place of corn. We must grow more alfalfa.

TESTING SOIL.

It is a good plan in testing soil for acidity to carry a jug of rain water along to moisten the soil for testing, rather than depending on the average well water in the acid soil district. This particular picture shows testing of soil for acidity on bottom land where alfalfa grew well without any soil treatment. Just a few

Real Demonstration Work.

rods from here on the upland the soil is so acid that alfalfa or legumes will not grow without the proper soil treatment. This is due to the fact that these bottom lands are alluvial, as well as containing large amount of available plant food, humus, and considerable limestone. Limestone is one of the cheapest sources of material to correct acidity in the soil. We find that it takes from two to six tons of limestone per acre for an initial application to correct the acidity already present. The Rothamstead Experiment Station has found after a number of years experiment, that it takes about 800 pounds of limestone per acre per year to meet the crop requirements. On that basis we aim to use at least two tons of limestone per acre once in every rotation, or four to five years. Larger quantities, however, are not harmful. Through the County Agent office the farmers have been able to save from 10



A Good Way to Spread Limestone.

to 65 cents per ton on limestone which means from $3 to $26 per car. We find a number of machines on the market that are capable of spreading limestone successfully, and if any one desires they can make one themselves for their own use. We advise the applying of limestone to the soil before the sowing of a legume, so as to help the conditions for bacterial growth.

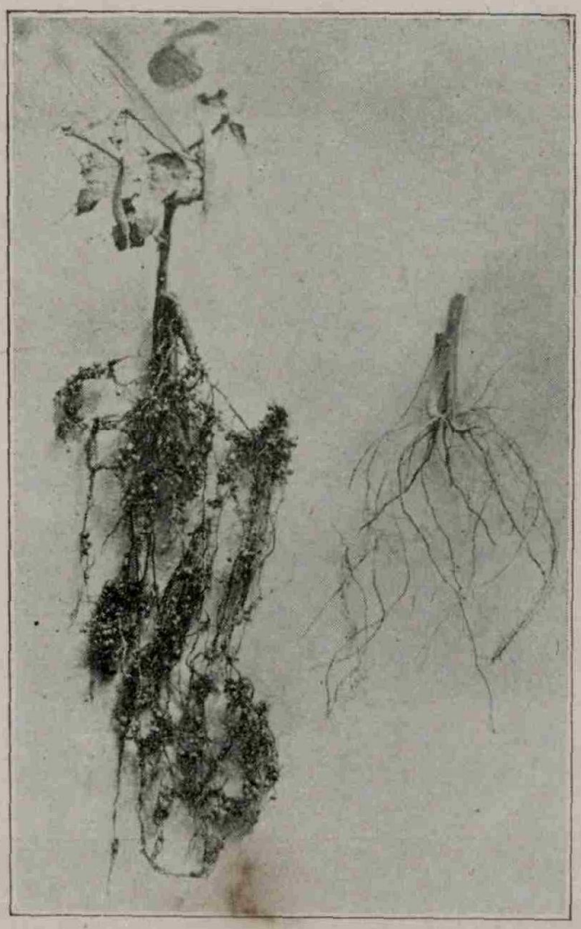
BURNT LIME OR QUICK LIME.

We do not advise the use of burnt or quick lime, as it burns the organic matter out of the soil and leaves it in poor physical condition. Those who have used it find that it is also very disagreeable to work with. After the lime has been exposed to the atmos-

The Arm-strong Way—Scoop-shovel.

phere, or what is known as air-slacked lime, it can be applied to the soil without any injurious effect. Some farmers are able to secure this air-slacked lime for little expense, except the hauling

and spreading. You get as good or much quicker results with this, depending on the amount that you apply to the acre. After the soil has been sweetened with limestone, it should be inoculated with the kind of bacteria that grows on the legumes you are intending to plant on that field. When we are sowing alfalfa we can either use soil from an inoculated alfalfa field, or soil from the roadside where sweet clover is growing successfully, and has a



large number of nodules on the roots. This picture shows inoculated and uninoculated common garden beans that were grown in the home garden within ten feet of each other. It is one of the best inoculated specimens that the writer has ever seen. The specimens have been preserved in formaldehyde solution, and can be seen by calling at the County Agent's office.

METHODS OF INOCULATING SOIL.

Several methods are recommended. The most important thing is to use soil containing the proper bacteria in the most effective, cheapest, and practical way. Many practice the use of 200 to 500 pounds of sweet clover soil per acre, by broadcasting it on the surface of the prepared alfalfa seed bed on a dark, damp day, or in the evening, and harrowing it in immediately. Another more common practice is what is known as the glue method. When convenient secure a bushel of dirt from a well inoculated sweet clover or alfalfa patch and dry this in the shade, as sunlight will otherwise kill the bacteria. This soil can be worked down to a fine dust powder by rubbing it with a block of wood or a brick, and

then sifting it so as to have only the fine particles left. Dissolve a handful of common furniture glue in a gallon of water and let it cool. Empty the seed in a washtub, and sprinkle at the rate of about one quart of this glue solution or enough to dampen a

The Late Mr. Brady Telling His Lake County Neighbors How He Managed to Raise Six Tons of Alfalfa Hay on a Worn Out Hill Top.

bushel of seed. Mix it until it is all moistened. Apply about a gallon of the inoculated soil and continue mixing until you have succeeded in glueing this soil on all the seed. If you use one bushel of seed and glue on to it one-fourth bushel of dirt of volume, then you will need to sow as much more seed per acre in

The Town Lot Shown Above Containing 1½ Acres Produced Enough Alfalfa Hay in One Season to Feed a Horse and Cow All Year. Besides the Owner Sold $50 Worth of Hay.

proportion to the extra volume of seed. For example, if you were going to sow 12 pounds seed to the acre, in this case you would need to sow sixteen pounds of seed per acre. This method of inoculating is good for any of the legumes, providing you use inoculated soil from the same kind of legume that you are inoculating.

This inoculated soil can be secured at any time that is favorable and prepared on a rainy day so as not to interfere with other work.

Sudan Grass.

Sudan grass is one of our new feeds, and while we have very little data on it at the present time, we did find the past year that we could grow practically as much per acre as alfalfa, with two cuttings, and that it is twice as rich in protein as timothy. The stock seem to eat it with a relish. It belongs to the cane family, and is planted in a well prepared seed bed right after corn planting time and cultivated. If planted through the planter the rows are about 3½ feet apart and will require about 4 to 6 pounds of seed per acre. Some of the first cuttings were from 6 to 8 feet high this year.

SOYBEANS.

Soybeans can also be planted right after the corn is planted and either put in rows by itself, and cultivated, or it can be planted

Interested Neighbors.

with the corn, to be used for the silo or hogging down. The above picture shows soybeans planted with the corn, by checking the corn and letting the soybeans run through the fertilizer attachment. It required about 6 acres of this combination of green growth to fill the same sized silo as it took for 12 acres of corn alone, in the same sized silo in the neighboring field. In making the comparative feed test with corn and soybeans silage against corn silage we found nothing in favor or against it. If soybeans are to be grown for seed purposes, they should be grown alone and should be cut and threshed, the seed bringing from $2 to $2.50 per bushel. We have run some soybean seed tests, but as yet do not know just which variety is the best adapted for our conditions. Soybean meal is practically equal to cottonseed meal.

COWPEAS.

Cowpeas are not grown to any great extent, however, they have been grown in the county with good success. A ton of cowpea hay contains 43 pounds of nitrogen, while a ton of clover hay has

West Creek Farmers on a Field Trip Studying Cowpeas.

about 40 pounds of nitrogen. We find that cowpeas make about as large a yield in tons, if not larger, and that the feeding value is practically as good. Cowpeas and soybeans are good crops to put in to help maintain a rotation where clover fails. They also make a good legume crop to hog down with corn. Cowpeas do better on sandy soil than soybeans.

SWEET CLOVER.

Sweet clover is another of the legumes that is very little used through this section. The above picture shows how abundantly it

Limestone Road Furnishing Ideal Conditions for the Growth of Sweet Clover.

grows along our limestone roads, where the conditions are ideal.

Ordinarily we find a well drained virgin soil, plenty of available plant food and plenty of limestone along the public road. Sweet clover is not a hard plant to seed, does well on a well compacted seed bed, and on a poor soil where it would be difficult to get clover or alfalfa to grow. This picture shows what an enormous

A Sweet Clover Crop.

growth is scattered on one farm in this county. Sweet clover has a deeper rooting system, is a greater soil renovator, and can be grown more easily in connection with our small grains, than our other legumes. It is a crop that needs more attention, and will be used much more as a fertilizer for loosening up the sub-soil for green organic matter, or even pasturage.

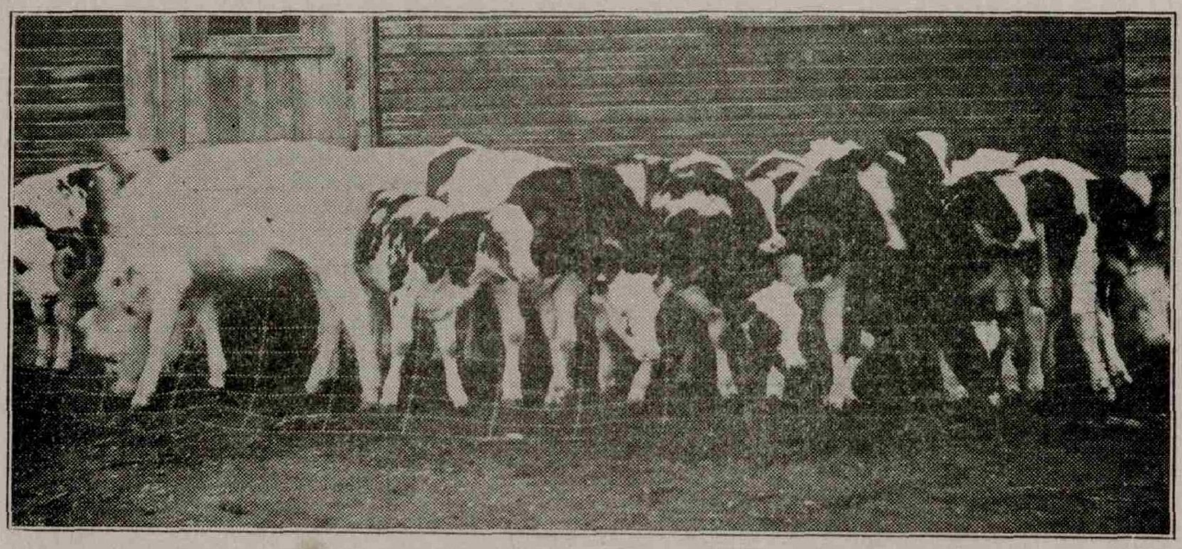
TEACHING PRACTICAL AGRICULTURE.

Eagerly Seeking for Knowledge.

The children like to study agriculture when they get practice and not so much theory. The teaching of the care of the home orchard has been carried through the schools again this fall—1916.

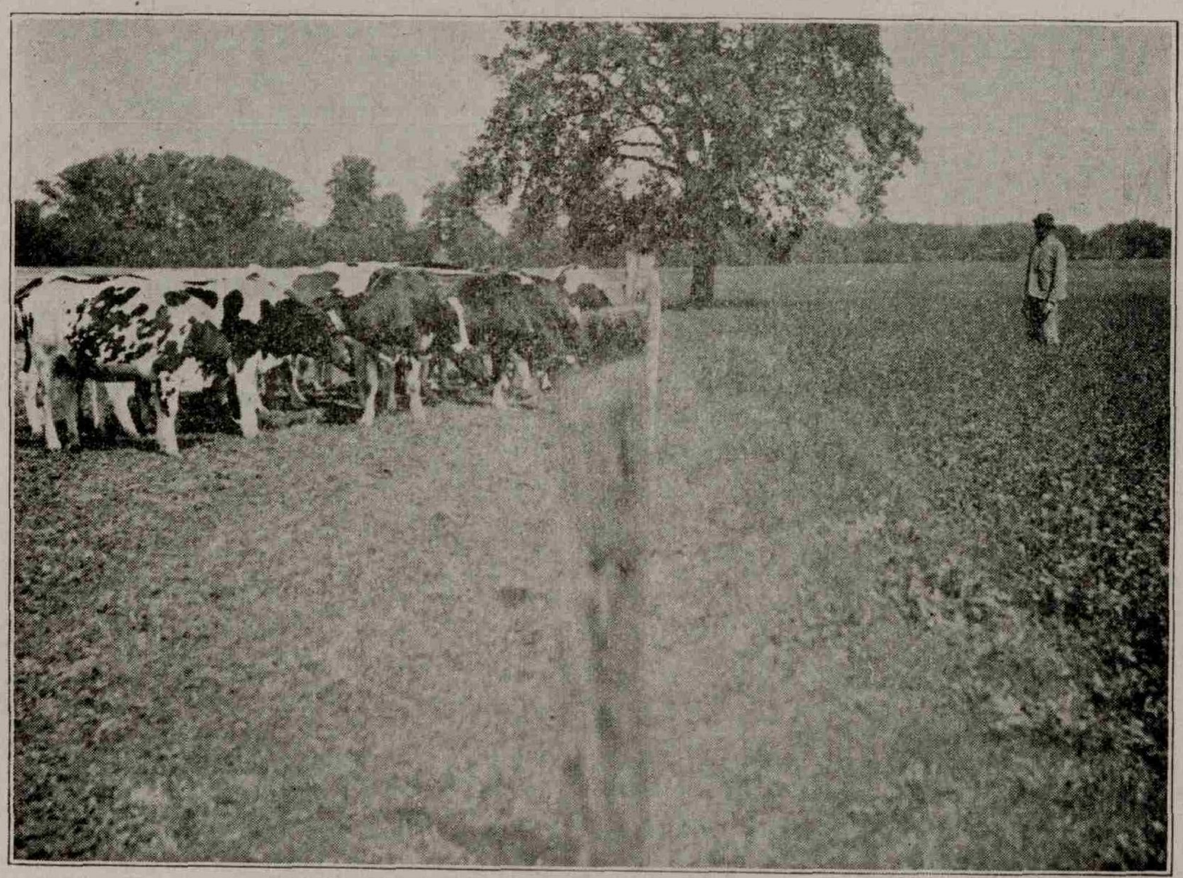
Dairying.

Dairying is one of the largest interests in Lake county, and Lake county boasts of being the leading dairy county in the State of Indiana. Right she should, because of the large number of high



Heifers Sired by a Thirty-five Pound Bull.

producing cows, holding records, and because she had the initiative to start the Cow Testing Association work, which is being



Keeping Up the Fertility.

used to such great advantage throughout this state. Dairying brings a market for most of the home grown products, and helps

home gives a home market and retains the fertility on the farm.

The highest producing record cow in the state of Indiana in 1914 was Dorothy Ormsby DeKol, that made 20,713.6 pounds of milk and 754.1 pounds of butter in 1914. The next cut shows

Beecher Wythe 2d and Family.

Beecher Wythe 2d, a pure-bred Holstein cow that held the state record during her 11th year, 1915, with 22,561.2 pounds of milk and 798.077 pounds of butter. She is a wonderful individual, and the mother of ten consecutive heifer calves.

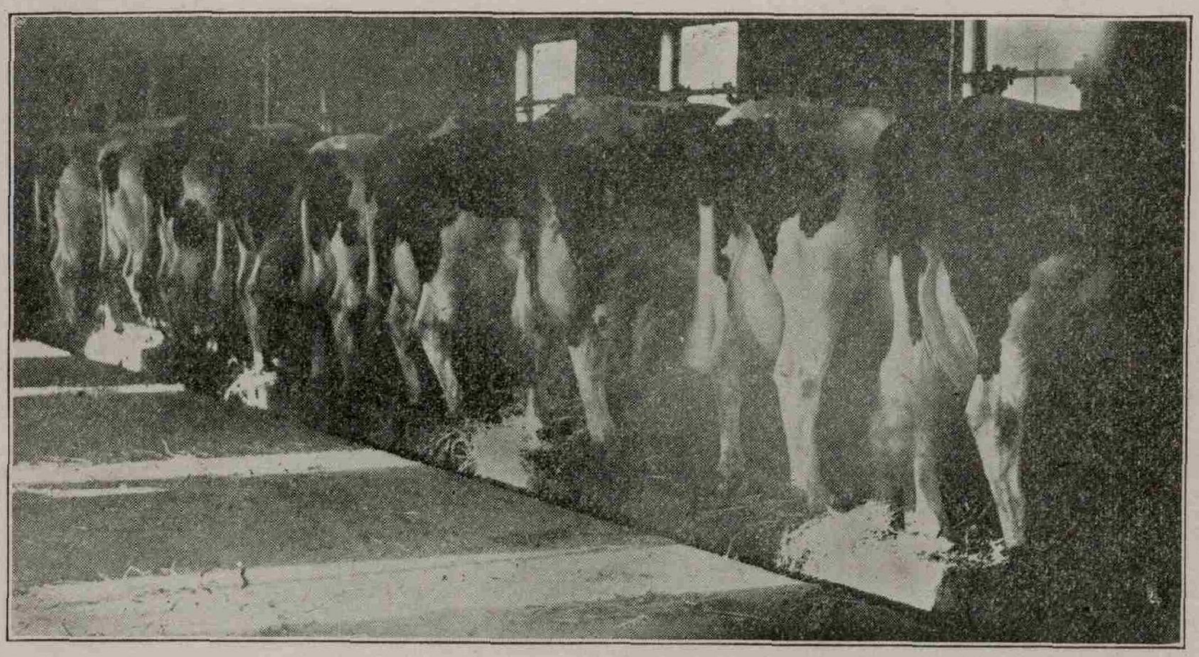
The owners of these kind of cows are proud, and the county is prouder to think that they are producing quality of this kind, with proper breeding, and that these cows are taking the place of the poor cow.

The Cow Testing Association work brought out the fact that these two cows were the highest and the lowest producers,

Cows As Extra Guests.

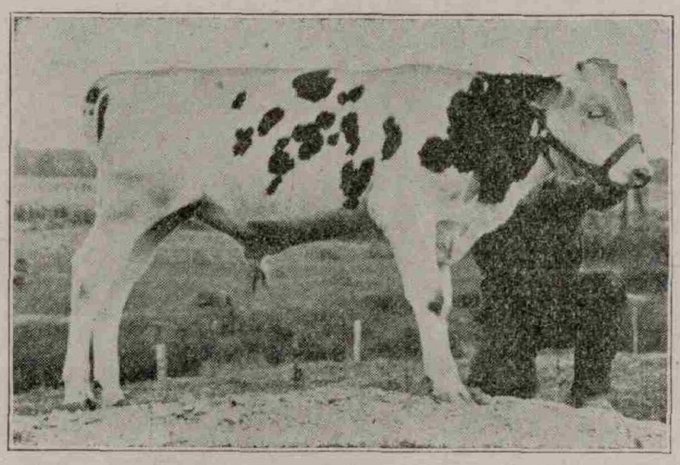
and that there was a net profit of $206.80 in favor of Dorothy as against $12.95 in favor of Bridget, the poor cow. Or, it would require the time, care and attention of 16 Bridgets to equal one

Dorothy. To make this more widely known, a dairy picnic meeting was held in Sherburne's Grove, Leroy, June 20th, 1914, in honor of Dorothy and Bridget. We not only had two good examples brought out in the Cow Testing Association, but we had with us some of the best dairymen in the State of Indiana, from Lake county, who started the Cow Testing Association work. To



Profitable Cows in the Place of Poor Ones.

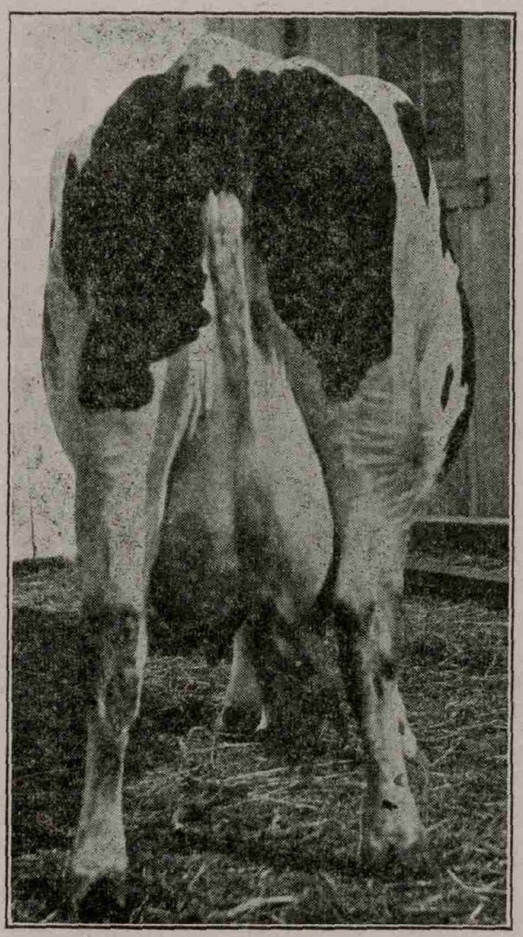
show the rapid advance from poor to better cows, the above picture shows ten cows producing over 40 pounds of milk per day, as a result of the Cow Testing Association work, where the same herd only had three before the association started. One of the better ways to get these 40-pounders and more Dorothy's and less Brid-



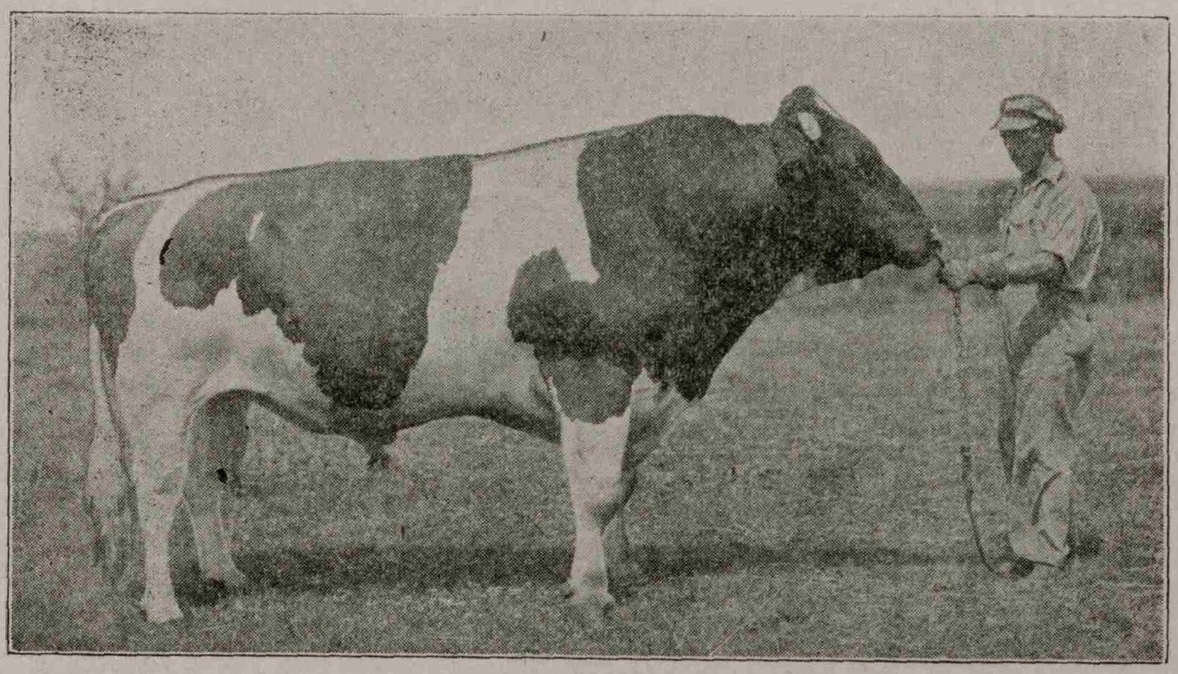
A Young Thirty-five Pound Sire.

get's, is to use better sires. This is one of the $2,000 calves with an ancestry of the seven nearest dams averaging over 35 pounds of butter in seven days. The use of better sires backed by proper high producing records, is one of the best ways to get away from feeding poor cows which you have to test continually, so that you

can find a good one. Here are two more views of pure-bred Holsteins that are making good in the county. Lake county is called

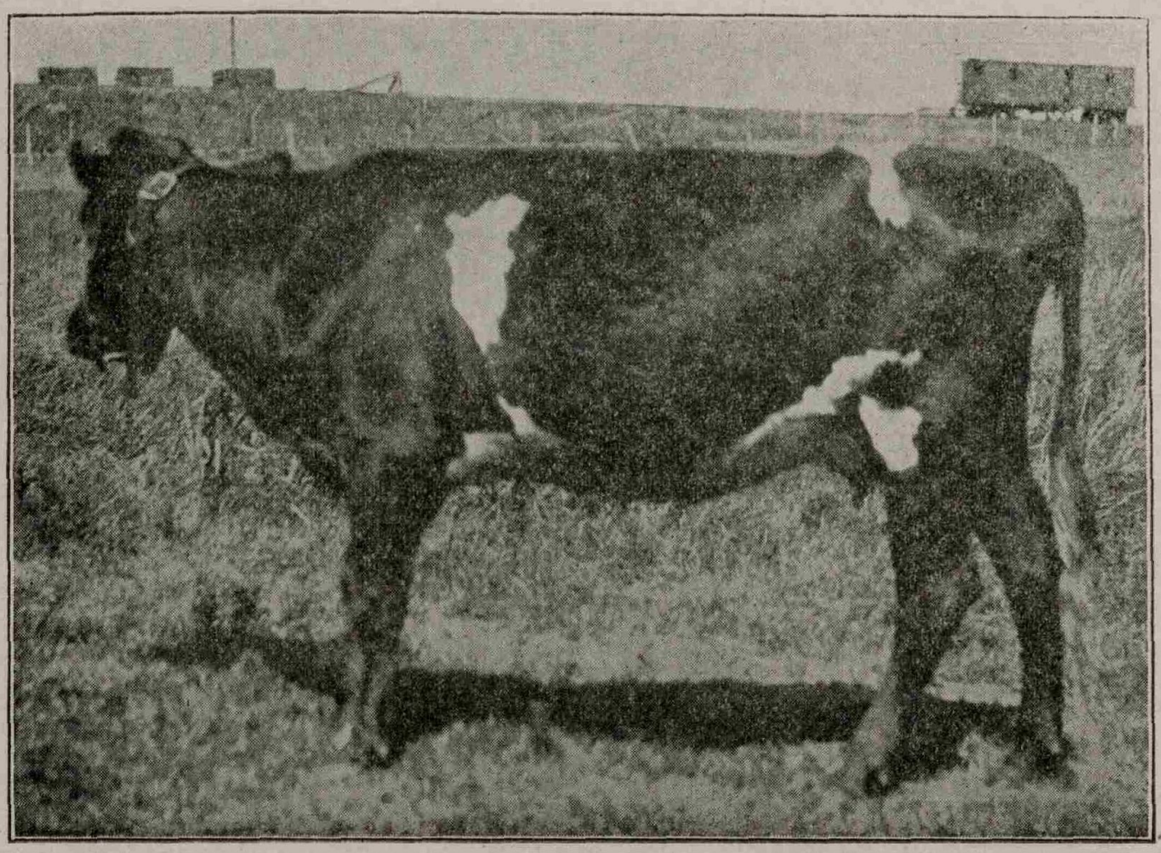


the "Denmark of Indiana", because of the fact that she has more good Holsteins than any other county in the state, and the largest Holstein Breeders' Association.



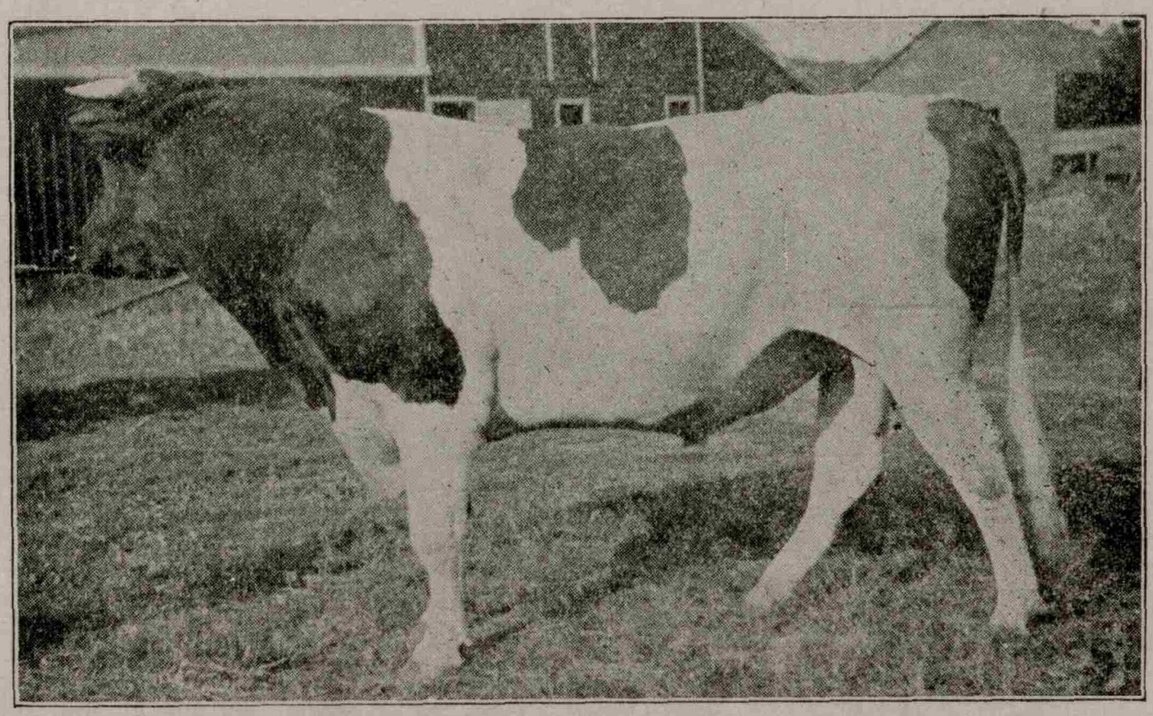
A Thirty-one Pound Sire Who Has Daughters That are Making Good. This Sire is Being Retained in This County.

THE STAR BOARDER.



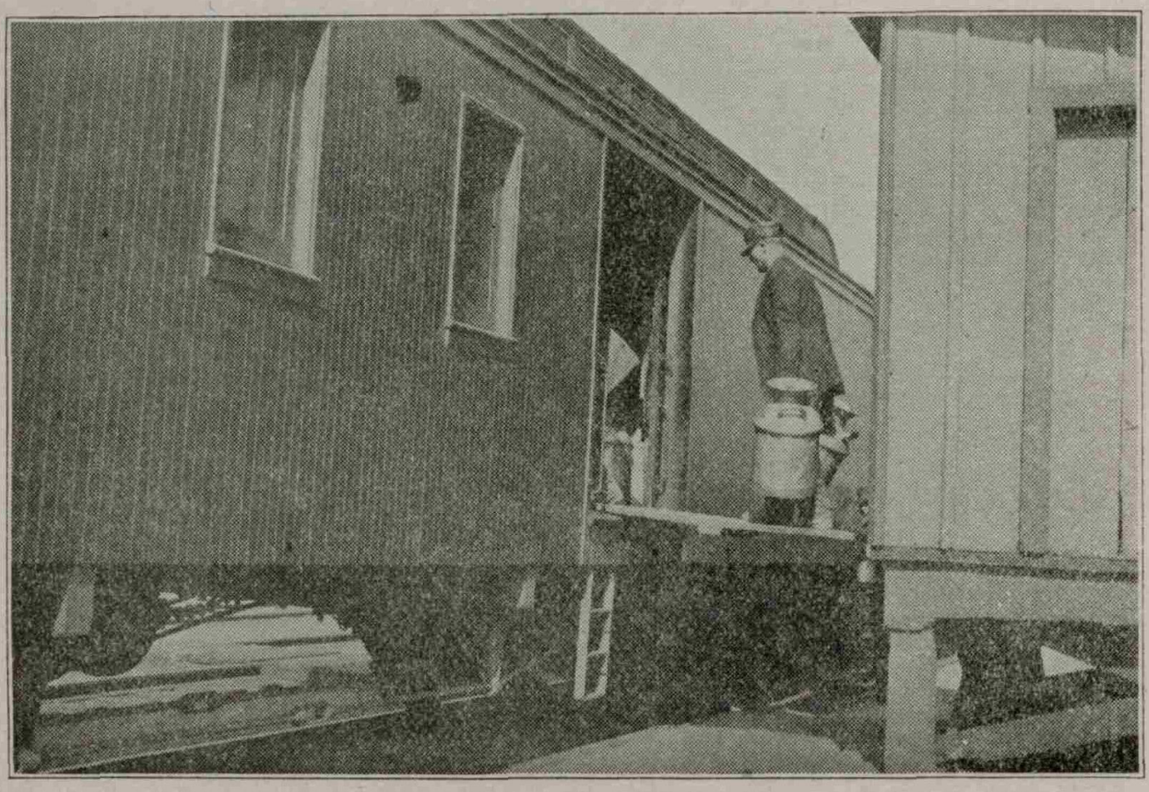
"BRIDGET"

With the use of pure-bred sires from high producing ancestors with a record of performance we can get away from raising "Star Boarders" better than through cow testing associations.



One of the Best Bred Sires in the State of Indiana.

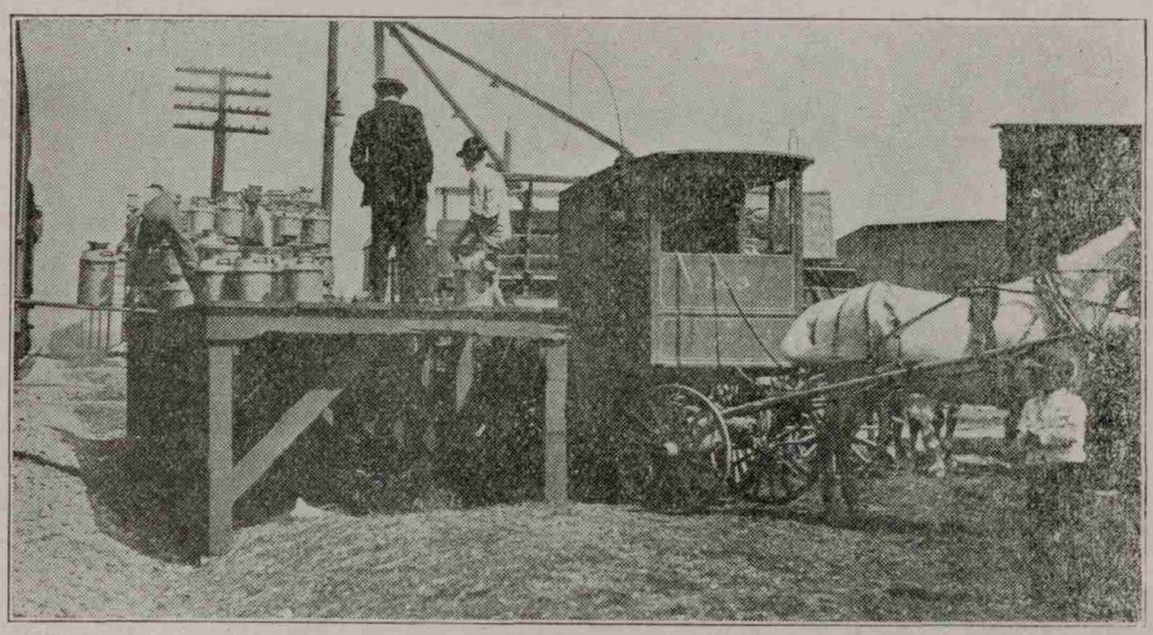
Injustice to Milk Shippers.



Farmers Carrying Cans of Milk Clear Into the Car On Request of Officials

Farmers are compelled to carry their milk into the trains after paying for the transportation of it. "It is not justice."

Not only that but the P. C. C. & St. L. R. R. Co. charges more for hauling milk from local points in Lake County than the Erie R. R. charges from Huntington, Ind., to Chicago, Ill., a distance three times further.



The Cheap Unloading Platform of the P. C. C. & St. L. in Chicago.

This has been going on since November 1, 1914. We have had three hearings before the Interstate Commerce Commission, but have not received a final answer.

Milk Fight.

In the spring of 1916, the milk producers went on a strike for higher prices against the milk dealers of Chicago, and it was recorded as the first successful farmers' strike in history. The producers had been the victims of the organized dealers for a number of years. Many of the producers have been afraid to say that their soul was their own, and when working as individuals they were not in a position to stand up for their rights before an organization of dealers. In this county the milk fight brought

Milk Shippers' On A Strike.

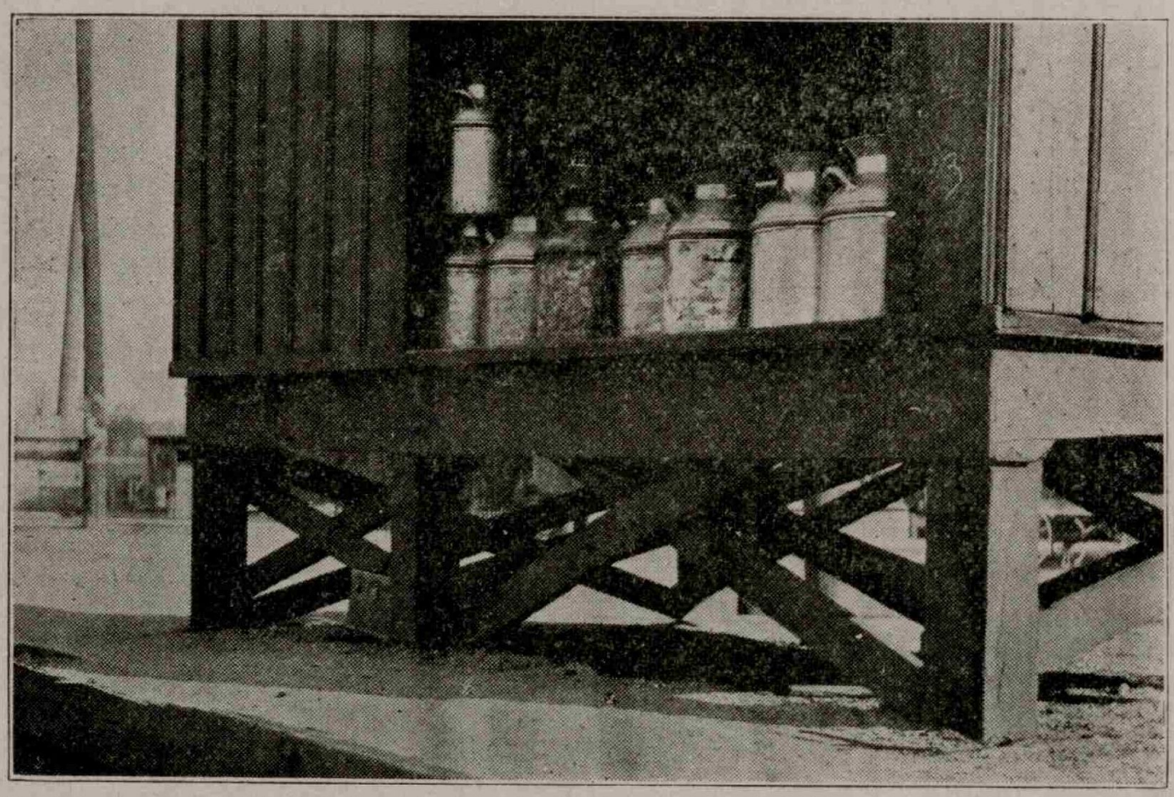
about a better understanding between the milk producers of the county, who have all been organized into locals at the different shipping stations, and are working for the same common interests.

The County Agent, after the county work was accomplished, was sent as far east as Huntington, Ind., on the Erie, to organize locals of the Milk Producers' Association, and to see the producers got the price. These shippers were getting 25 cents per hundred less for their product than we were and had a less shipping charge than we had on the Pennsylvania Lines in Lake county to Chicago. The average prices of $1.30 per eight-gallon can delivered in Chicago, and $1.55 per 100 pounds of milk delivered at the bottling plants are reasonable rates. The producers ought to receive more. It takes more brains to sell a product judiciously than it does to produce it.

When the day comes that the producers work as few hours as other laborers, and charge in proportion for their work, and for the help of the family; get interest on their investments, there

will be a greater struggle for existence among the class of people who are living off of the profits that rightfully belong to the producer.

Organization is civilization, and the producers are entitled to it. These pictures show what organization does in getting the sceptical man to co-operate with his neighbors to stand for a fair proposition. It is true that we had to persuade a few patrons not to deliver their milk, or see that the milk was disposed of before reaching the delivering station. Some producers had to be convinced that it was to their interest to belong to the association. Those who are getting 15 cents a can, and about 25 cents a hundred more for their milk than they could have received if it had not been for the Milk Producers' Association, are glad that there is such an association that stands out before the world today. The dues of the Milk Producers' Association are $2.50 per year, but occasionally some producer who had his milk spilled had the extra expense of dismissing a suit and paying the costs, because he undertook to stop his neighbors from doing him a good turn. It was all for a good cause and there are no hard feelings, and we are co-operating for a better way to sell our milk in the future, and trying to secure a fair price.



These Cans Full of Milk Stood On the Platform Over a Month.

Fifteen farmers delivered 57 cans of sweet milk to the Pennsylvania Lines at Schererville. The Agent gave them a receipt for their shipments. The milk train left the milk and the Agent removed the tickets. The farmers contend that the railroad owned the milk and also the cans which they were unable to return in good condition.

Hogs.

Throughout the grain district a great number of hogs are raised each year, which proves to be a very profitable practice on a straight grain farm. There are many pure-bred herds of the different breeds of swine, and those are best which suit you best under your conditions. In the dairy districts we find too many dairymen who are not raising enough hogs. When the dairymen learn, and eventually they will have to, to raise more hogs and have different sources of income for profit instead of from milk shipping, they will find their battles easier and life more pleasant. In 1913 there was considerable hog cholera in Lake county. On

Vaccinating the Last Hog.

June 1, 1914, we held a hog cholera vaccination demonstration, in which the local veterinarians of the county were present, and Dr. Clark of the Veterinary Department of Purdue, assisted and answered questions along this line of work. We found that we were able to vaccinate 85 head of hogs in two hours' time, with the assistance of the farmers and veterinarians present, so that each had a practical working knowledge of doing the work. We have found further, however, that vaccination for cholera is not the whole thing. Cleanliness, sanitation and good feeding have more to do with the prevention of hog cholera. A good alfalfa, clover or bluegrass pasture will help to keep conditions sanitary and to

give a balanced ration. The majority of our people have had little trouble with cholera who have been practicing these three practical points. We believe you will find upon inquiry that Dr. Connoway of Missouri has some very good practical, up-to-date data in regards when to, and when not to, vaccinate. Plenty of good, clean feed, not changing feeds too rapidly and plenty of lime scattered around the feeding and sleeping quarters are things of more importance than a lot of filth in the hog pens. It is easier to avoid disease than to get rid of it. A cement feeding floor can be easily cleaned and disinfected. If the sleeping quarters are about twenty rods from the feeding floors, unhealthy hogs will not carry filth, such as intestinal worms to the food troughs, to be eaten by the rest of the herd. A supply of slacked lime should be kept on hand for frequent use.

APPETIZERS AND TONIC.

A home-made tonic is one of the cheapest things that can be supplied the hog, in the form of lime, salt, sulphur, copperas, slacked coal and ashes. The air-slacked lime and sulphur can be used in equal parts, with two or three times as much salt, and this can be mixed with either wood charcoal or charcoal made from corn cobs. Dissolve about one-half the amount of copperas as you use sulphur, and sprinkle this solution over the mixture. This should be kept before the hogs at all times, as well as slacked coal. The supplying of the mineral requirement of the animal body in this form may save the rooting up of the hog lot or meadow, as well as keeping the hogs in better physical condition. Ground limestone is a big help if kept in the hog lot so the hogs can help themselves.

FEEDING.

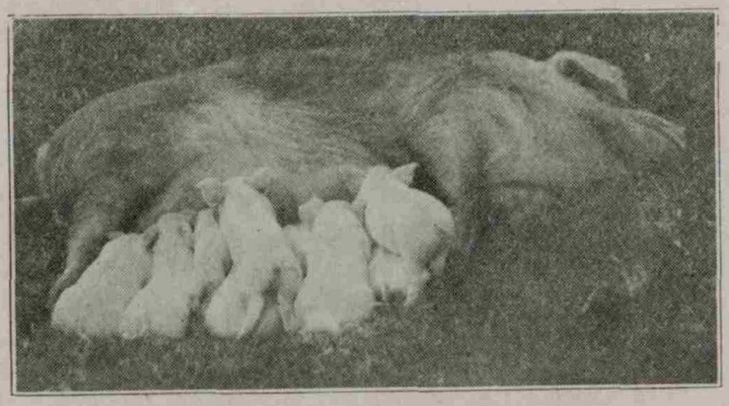
In regard to feeding, it would be good policy not to feed too much green corn, in the summer, especially if the hogs have not been gradually accustomed to it. One of the best hog pastures is alfalfa. This supplemented with corn and tankage gives the hogs a balanced ration. The Iowa station has found that if a hog is supplied with the different kinds of feeds, he will balance his own ration. It has been proven by the Kansas station that corn and water alone will starve a hog to death. Corn and alfalfa is not a balanced ration, but when supplemented with tankage is one of the cheapest and most economical feeds on the farm.

This question of feeding or nutrition of pigs is a very important one. The source of protein is an important item. Dr. Waters of the Kansas Station stated that the source of protein as a feed for hogs is one that is worth considering. It is thought that the "lysin" found in legumes, that is not in corn, is one of the chief reasons why legumes are so important in growing and fattening hogs. Let us avoid hog cholera if possible, by better feeding, because it can not be cured. Let us also remember that hog cholera

is traveling rapidly over the country, and unless we take some precautions we are apt to lose considerable of our profit. "An ounce of prevention is worth a pound of cure."

THE SELF FEEDER.

Prof, John Evvard, of Ames, Iowa, has done some excellent, practical work in hog feeding experiments at that station. He has found that it is more profitable to let the hog figure out his balanced ration, than for the farmer to figure it out for him. It looks reasonable that the hog should know more about his own wants than the person who is doing the feeding. One writer in commenting said that where the different kinds of feed were put



Nature's Self-Feeder With Nine Applicants.

in the self-feeders, the hog did not know the difference between high priced and the low priced feeds. We grant that, but it is the feeder's business to know which feeds are the cheapest, containing the elements he wishes to feed, and then to buy those feeds. We have demonstration work in this county on that line and the work has been with private persons, who have not kept records in comparison with the other method, but who favor the self-feeding system more than the old practice of feeding. Some boys in the pig club are doing that kind of work.

HOGGING DOWN GRAIN FIELDS.

The hogging down of fields of grain is a practice that [redacted]

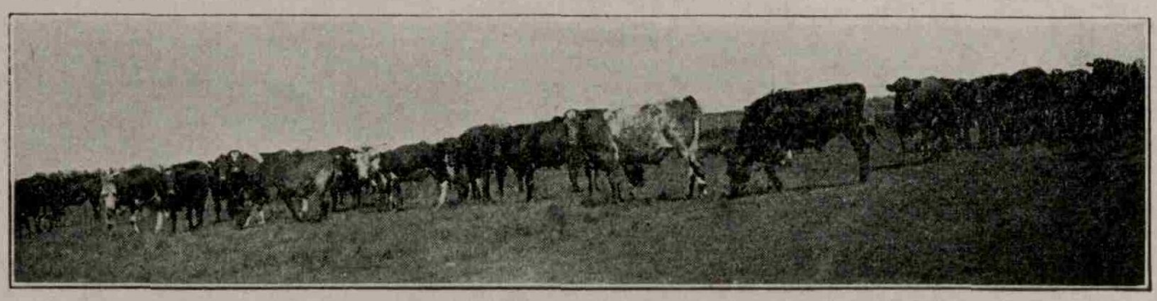
[redacted]

up to July 15 when he cut 3 big loads of good hay from the field.

HOG LICE.

Crude oil, which can be purchased in barrels for $2 to $3 a barrel, is a very effective louse killer when sprinkled on the hogs. There are a number of hog oilers on the market—some of which are satisfactory, and some are not.

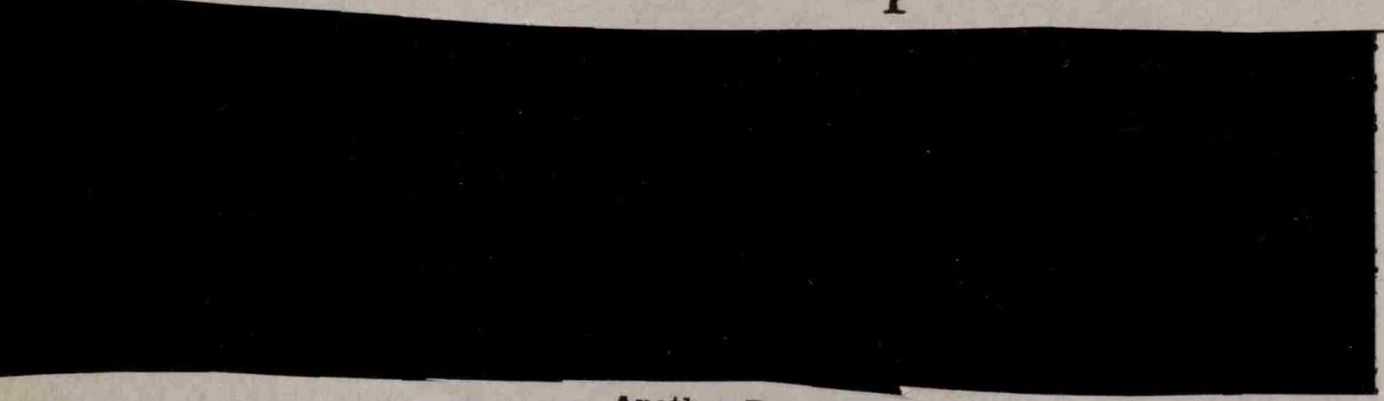
Beef Cattle.



Drove of Feeders On Blue Grass Pasture.

We have pure-bred breeders of Shorthorns, Angus and Herefords. A herd of pure-bred cattle on the farm furnishes a market for home grown feed, and with the aid of a manure spreader the owner can build up his land without selling the fertility through the grain system of farming. The cut of Shorthorn feeders was taken on August 21, 1914. These same cattle were the ones that were killed and destroyed on account of the foot-and-mouth disease November 15, 1914. Another picture taken on the same ranch the same day, which appears on the cover page, shows a bunch of three-year-old Hereford feeders that averaged a little over $126.00 per head, and were sold just before the foot-and-mouth disease broke out in this county. The Brown ranch had also been in the practice of feeding several thousand sheep a year, which business has been temporarily handicapped on account of the foot-and-mouth disease.

Sheep.

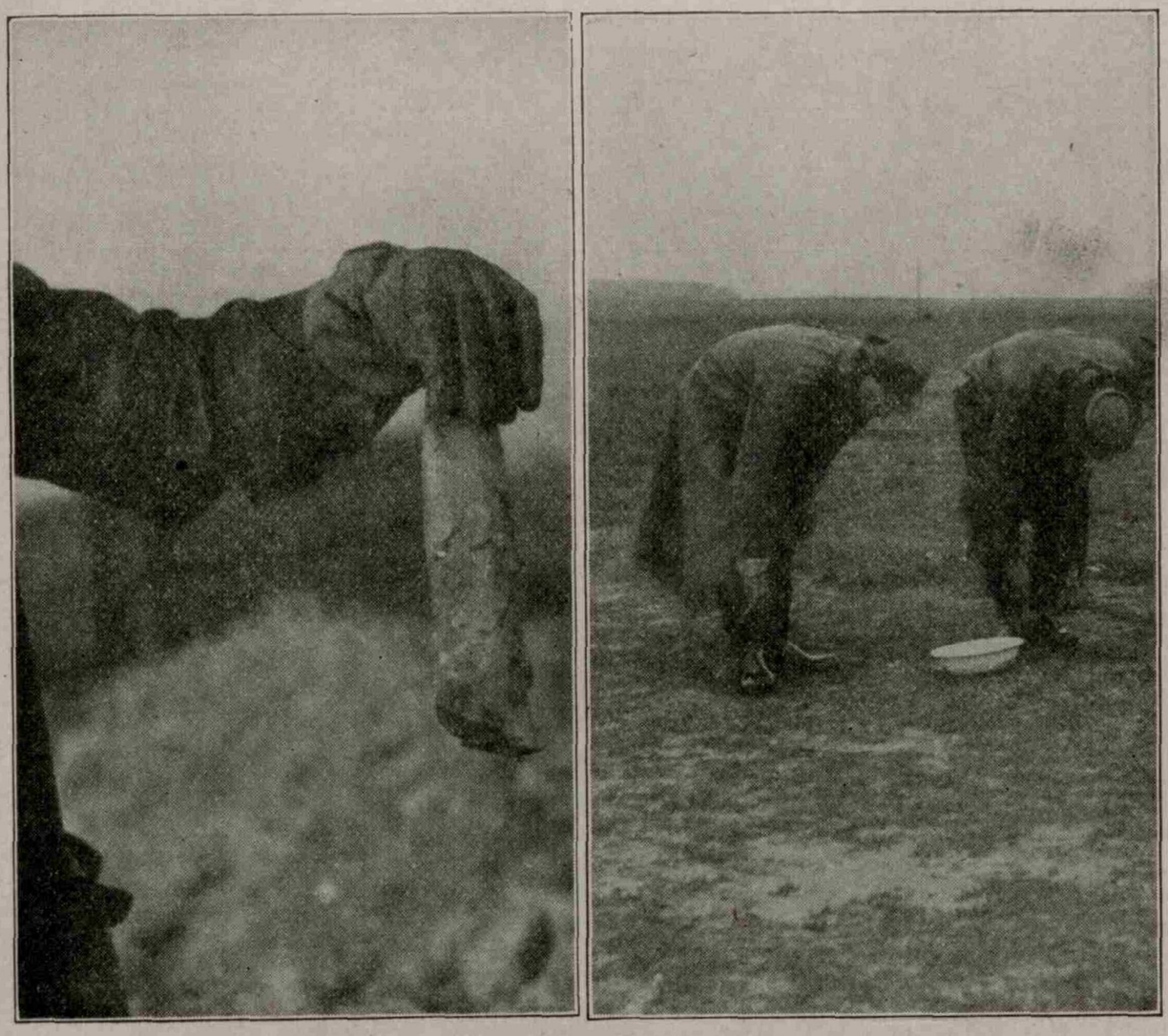


Another Drove of Feeders.

There are too few sheep raised or fed in the county. Nearly every farm yard should have a few sheep if it were only to eat the weeds. The present price of wool and mutton make sheep raising a paying proposition. Again there is less money invested for the large returns in a short time.

Foot-and-Mouth Disease 1914.

The County Agent had traced all shipments of cattle from the Union Stock Yards, Chicago, since Oct. 15, 1914, and asked that they be quarantined by the State by Nov. 3, 1914. The infection of the foot-and-mouth disease found in Lake county November 6, 1914, was traced directly to the Union Stock Yards, Chicago. The infection there was traced to Niles, Michigan. The introduction of the disease into this country is theorized from one-half dozen or more sources and causes. However, during the early part of August the disease was found surrounding Niles, Michigan, by



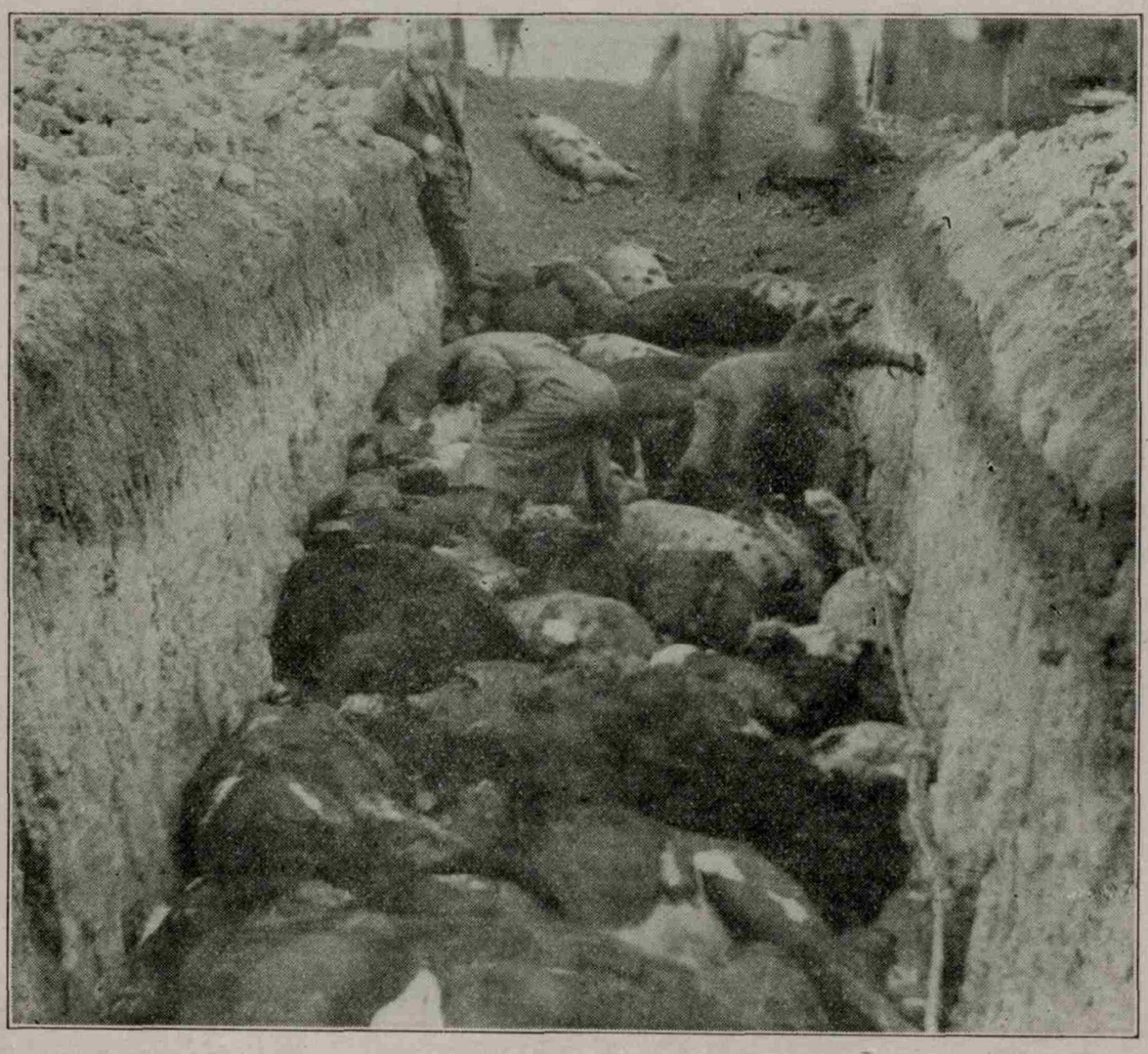
Dr. Smith and County Agent Disinfecting Before Leaving An Exposed Farm, and a Diseased Tongue of An Infected Steer

local veterinarians, but was not recognized. It appears that the first stage of the disease had passed, and that the appearance of the disease resembled mycotic stomatitis, and it was so diagnosed as that.

The Union Stock Yards of Chicago was closed November 2, for the first time in years, prohibiting the shipment of any cattle, sheep, goats, or swine into the yards.

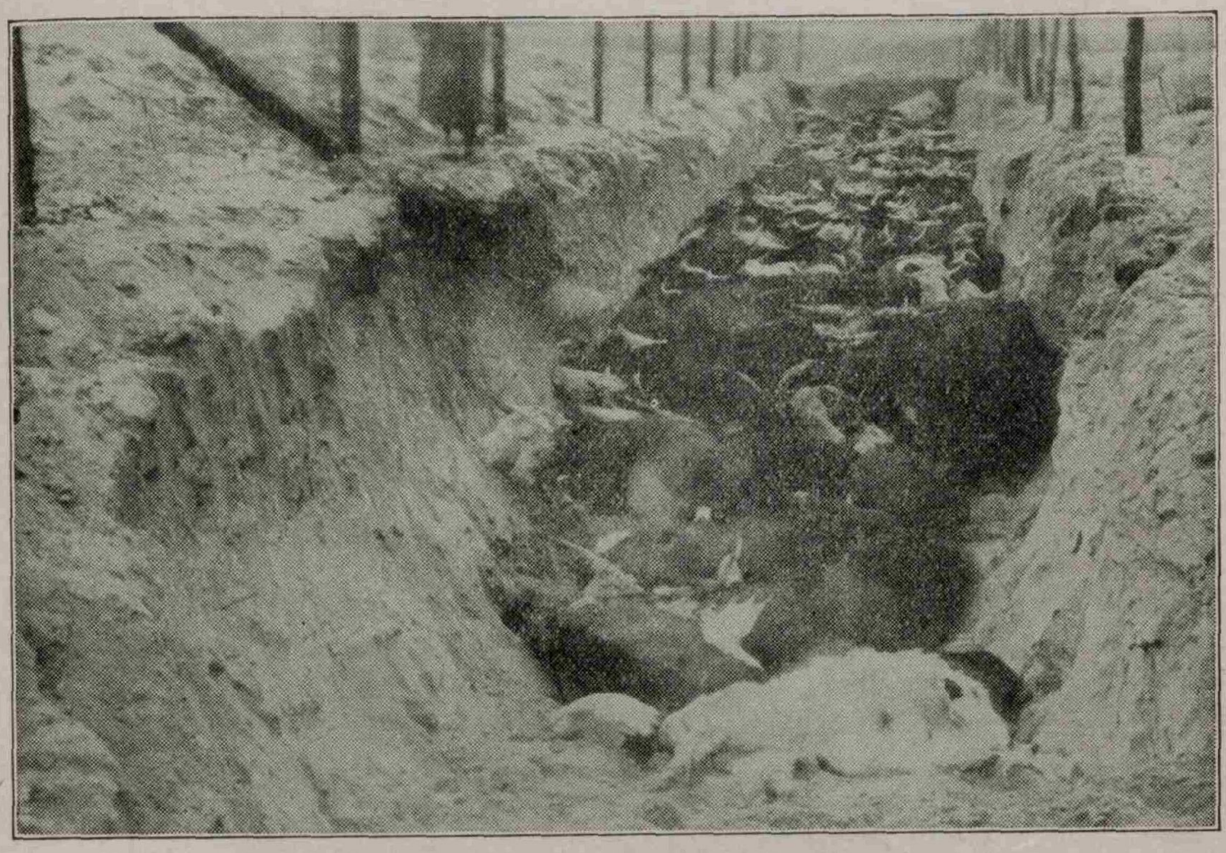
On Friday, November 6, Drs. Bailey, Smith, and the writer visited Feiler's herd which was under suspicion, and found foot-

Pit Too Small for Fat Cattle.



Hogs and Cattle Killed in the Pit. This Avoids Leaving Blood Infection Outside for Dogs and Birds to Scatter Over the Country.

and-mouth disease present. Dr. Houck sent help November 7—the State Veterinarian came and left for good and by midnight that evening the county was under quarantine and posters were



Trench 120 ft. Long, 10 ft. Wide and 8 ft. Deep Dug With Teams and Scrapers.

being scattered over the county. The County Agent had the responsibility of conducting the work in the county. November 10th the diseased cattle had been condemned and arrangements

Spraying After the Clean-Up On An Infected Farm.

made for disposing of them. November 14, 35 head of cattle and 42 head of hogs were driven into a pit on the Feiler place, killed, opened, limed and covered up. November 15th and 16th, 314 head of cattle and 281 head of hogs were killed and buried, belonging to John Brown & Son. The cleaning and disinfecting of the infected farms was finished November 30th. February 9, 1915, Mr. Brown received one-half of his pay from the federal government, and May 1st he received the other one-half from the state. May 17, 1915, Lake county was made free area. There was no spread of the disease from where the infection started at any place in the county, and we had a quarantine that was a quarantine, and the people respected it. The thousands of dollars saved Lake county by preventing the spread of the disease to the dairy herds is not estimated or even realized.

We have a set of 24 pictures of the destruction of the foot-and-mouth diseased cattle and hogs taken in this county.

LAKE COUNTY FAIR, 1915, BIGGER AND BETTER.

The Lake County Fair was bigger and better because of the things that it stood for and that were accomplished. We had good exhibits, better in most departments than formerly, with one of the best poultry shows ever held in northern Indiana. The free attractions were of the highest type, and no indecent side shows were allowed on the ground. The writer, as secretary, produced a complete report, showing the receipt and expenditure of every dollar connected with the Fair work in all the different departments. This record is on file in the office.

We tried to clean up the "Blind Pigs" and "Tigers" that welcome the pickpocket elements from the slums of Chicago, but we received no justice. Unless the people take this in hand and clean it up, there will be tragedy connected with it. That element has no respect for human life or decency.

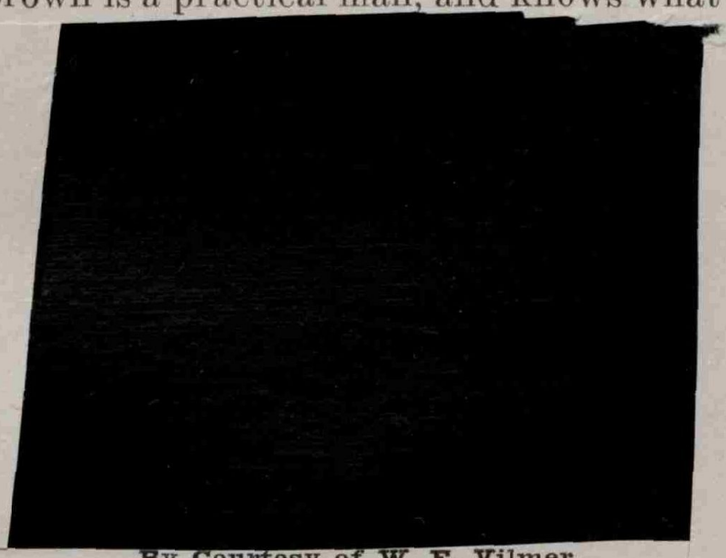
THE 1916 AGRICULTURAL SCHOOL FAIR.

The First Lake County Agricultural School Fair was held at Crown Point, Ind., Saturday, October 14, 1916. There were more exhibits of agricultural products grown from the soil than was ever exhibited at the County Fair. This work has been developed through the schools. The Boys' and Girls' Pig Club; Poultry Club; Corn Club; Canning and Baking Club exhibits were a great surprise to the public. The children made their final showing of the year's work at the school fair and the schools made an exhibit of any of the agricultural products grown from the soil in their school district regardless of who produced the products. These exhibits were of the highest type and included many things that the average person did not know was grown in the county. Every one who was fortunate enough to get in to see the exhibit admitted that it was the best display of agricultural products they had ever seen in the county. It is the duty of the people to encourage work of this kind that has a moral influence back of it that will build up the agricultural interests of the county.

Poultry.

Poultry on the farm is one of the neglected industries that should be one of the leading sources of revenue from the farm. There is enough poultry raised in the United States each year to build two Panama canals, and the cost of the one that we have is over $300,000,000.

Mr. T. H. Brown of the Lake County Poultry Association is one of our most enthusiastic workers who has spent the past two years in giving his time free to help the ordinary poultryman or farmer to get hold of the practical lines on the raising of poultry on the farm. Mr. Brown is a practical man, and knows what he is talking

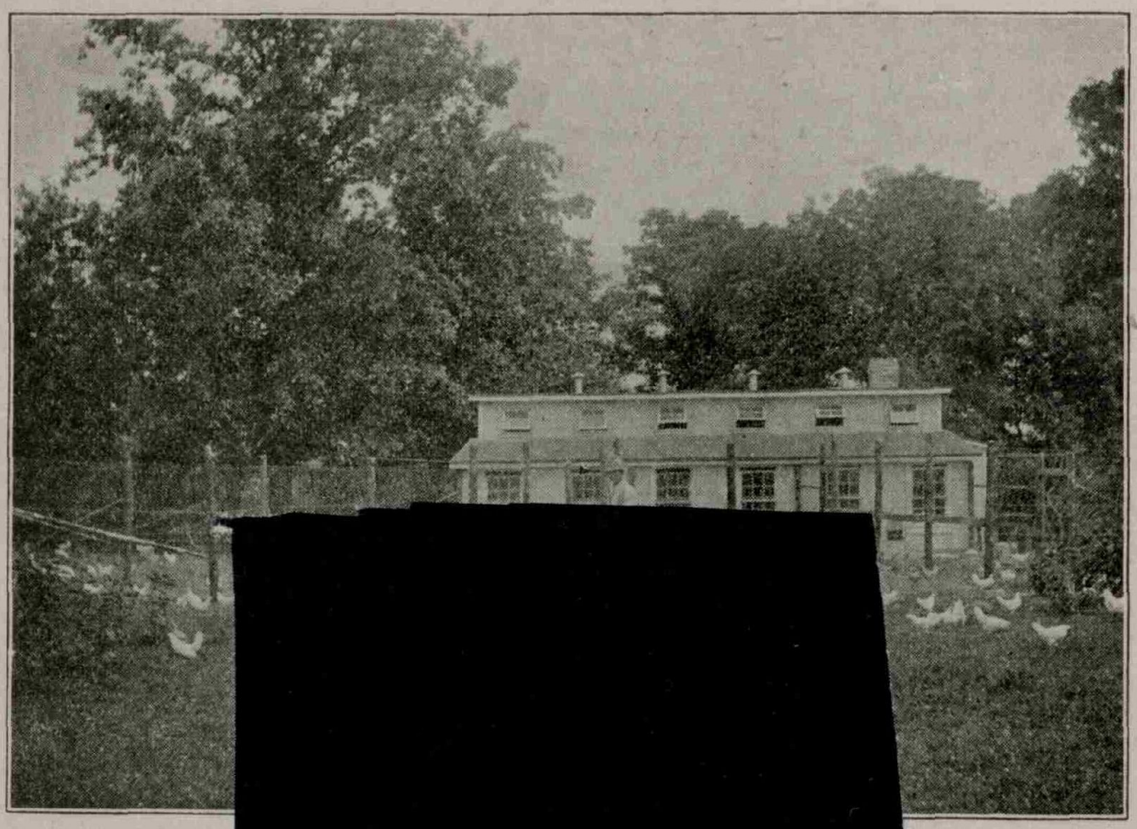


By Courtesy of W. E. Vilmer.

about in giving this advice. Mr. Brown has offered a setting of eggs from any of the American breeds, free of charge, to the best boy or girl in each of the country schools in the county, providing they would take these eggs, set them, and raise chickens and show the best rooster and two pullets at the Hammond Poultry Show next fall. The children may learn the poultry fancier's or grower's failures with little expense. Do not try to be a fancier but a producer.

POULTRY EQUIPMENT.

We have poultry houses in the county that are practical. They are built warm with plenty of sunlight and fresh air, free from drafts. In order to have the hens lay in the winter, three things are necessary, fiirst, we must have early hatched pullets, and second, grow them well; and third, we must have a good place free from drafts and exposures to keep them where they can get plenty of feed during the winter. This picture shows an extensive farm poultry plant where 2000 chickens were raised this year; roosters all being sold for broilers when they weighed about two pounds. We have other farm homes that have produced 400 to 800 saleable chickens. This is a good paying side line, if carried on in the right way. We are near one of the greatest future markets of the world and should look into profitable poultry raising on the farm.



Select the k[redacted]ommand the most profit in [redacted]s are always in preference to the mixed flocks.

Do not go in as a fancier as there is more sure profit from the average farm for eggs and meat.

GOOD RATIONS.

Feed wheat and oats in the morning and corn at night. Scatter this in litter in the hen-house morning and evening and let the hens exercise while feeding.

Five pounds each of bran and shorts, and 3½ pounds of meat scraps should be placed in a hopper where they can help themselves. If you have plenty of milk use it for drinking purposes and leave out the meat scraps.

Little chickens might be fed equal weights of sifted cracked corn, wheat and steel-cut oats in litter. The dry mash hopper feed is in proportion of 10 pounds each of bran and shorts; 5 pounds each of corn meal and meat scraps, and 1½ pounds of charcoal. Give them all the sour milk they want to drink, but don't give sweet milk one time and sour milk another time.

INCUBATORS FOR HATCHING.

The incubator gives good results if you follow directions, but if you do not, do not blame the incubator; they are labor-saving devices.

Eggs lose moisture in the presence of heat and that is why

there should be moisture in the incubator. A good way to tell if there is plenty of moisture is by putting in a damp blotter. If it dries up quickly, dampen and put in again. Just before hatching time dampen a cloth and lay it over the eggs until they have little drops of moisture on them.

As soon as the chickens are hatched put them in a brooder and then clean and disinfect the incubator. The feeding of little chickens the first two or three days gets their digestive organs out of condition. The yolk of the egg that is taken into the body of the young chick is sufficient food to start it out. Improper feeding, or getting damp or wet may cause white diarrhoea for which there is no cure. The early hatched chickens are generally in better condition because their mothers were in better condition to lay early.

MARKETING.

It pays to market early at a small weight and a high price. The cheapest weights that are produced are the first two pounds. Some one kept track of the prices paid for poultry during the different months in 1913 and found the following:

May—35 cents per pound.
June—31 cents per pound.
July—19.8 cents per pound.
August—14 cents per pound.
September—11 cents per pound.
October and November—9 cents per pound.

The young chicken weighing two pounds in May would bring seventy cents and it would have to weigh eight pounds in November to bring seventy-two cents with the extra cost of feeding.

Plan to have hatches early and sell on a better market.

LICE AND MITES.

Hen lice reproduce on the body of a fowl. They do not suck blood—it is the red mites that suck the blood. Some use blue ointment, the size of a pea and put in the fluff feathers to remove lice from an old hen.

Raw Rock Phosphate makes an excellent dust bath.

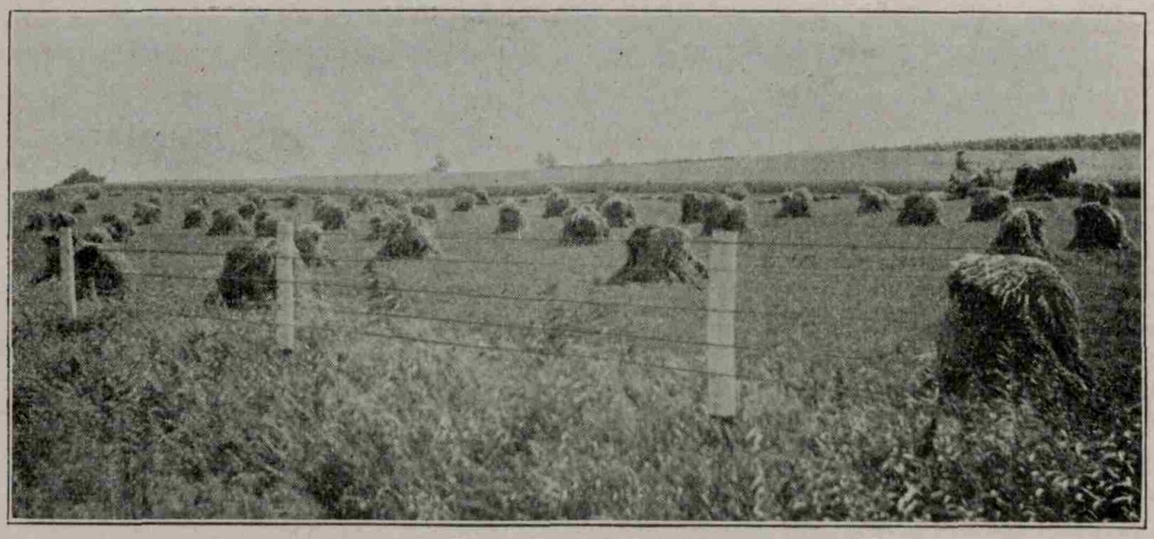
Common lime-sulphur that we use for spraying our orchards is one of the most effective sprays that can be used in spraying the inside of the hen house to prevent or kill lice and mites. Use one gallon to eight gallons of water.

ROOSTS.

Have the roost fixed so they can be removed easily for cleaning. Clean out the droppings at least once a week.

A load of sand thrown in the hen house in the fall will furnish grit and a place to scratch during the winter.

Fences.



A Well Kept Fence is the Pride of Any Farm.

The majority of us in the county lack good fences. The above cut shows a fence which had the fence posts treated and painted, and is a credit to the farm and the community. We get more out of the use of our land if we have a hog-tight fence. Hogs or live stock could pasture many of our fields after the crops are harvested, or in a number of cases the crops could be hogged down. There are places in the State of Indiana where men follow a business of building fences, the same as the carpenter follows the occupation of building houses in the city. The accompanying picture shows the final results of pure-bred live stock which pastures in a

field along the railway where poor fences are used. The Pennsylvania lines had stubbornly refused to build a fence along their right-of-way for the past three years, and many times the farmers had to herd their cows to keep them off the track. This was an actual condition. After this pure-bred heifer had been destroyed, and as usual, it was one of the best that the owner had, the railroad settled for it after their usual delay at a reduced price and put in a good fence.

Canada Thistles.

Canada thistles have a good foothold in this county, and could be exterminated if the law was enforced. It is the duty of the trustee to see that the Canada thistles are not allowed to go to seed in his township, and it is the duty of the land owners to cut

A Healthy Patch.

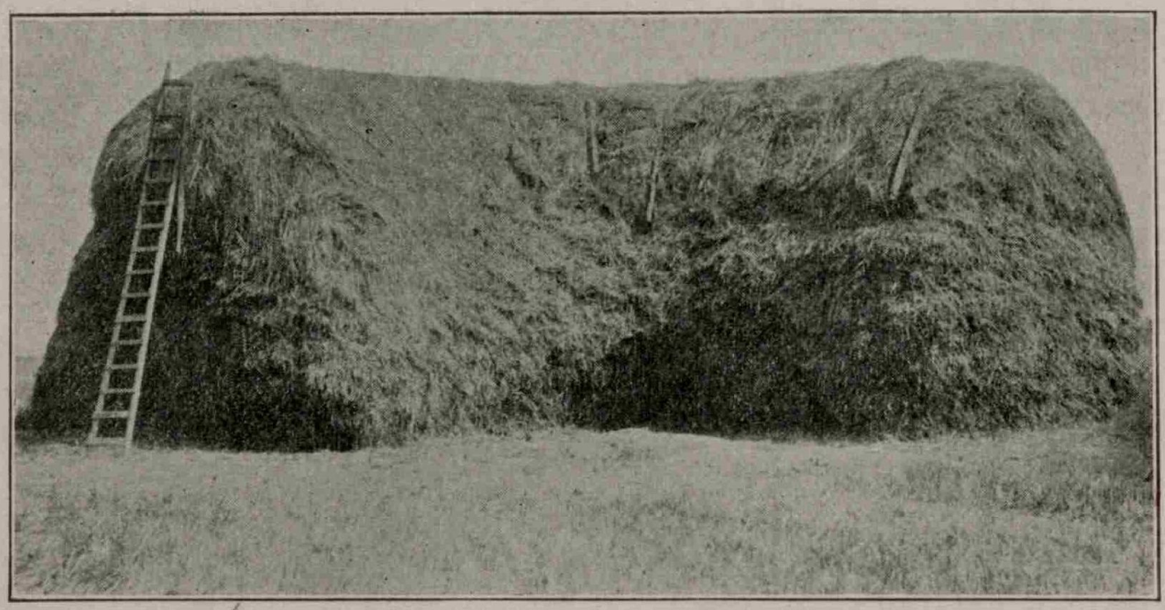
the thistles. It is up to the supervisor to see they are cut along the roads. The above cut shows a patch of Canada thistles growing in a timber pasture along side of the public road. This picture was taken when the thistles were in full bloom, and the thistles going to seed. The writer secured some of this seed and planted it for germination, and found that it would grow. Why not get together and destroy this bad weed before it scatters further.

METHOD OF ERADICATING.

In 1914 we started spraying with a chemical, and had very good results. The Purdue Experiment station tells us that orchard heating oil, which can be secured at Whiting, Ind., is one of the cheapest and best sprays to use to destroy the plants. Summer fallowing will also keep the tops from growing. If we summer-fallow and allow the tops to get a good growth before they are cut down, it will not destroy the roots very quickly, but if they are kept below the surface of the soil, the underground roots can be weakened so that the plants can easily be destroyed. The better plan would be to summer fallow and sow to alfalfa, as the alfalfa is cut so often that it will help to weaken and destroy the plant.

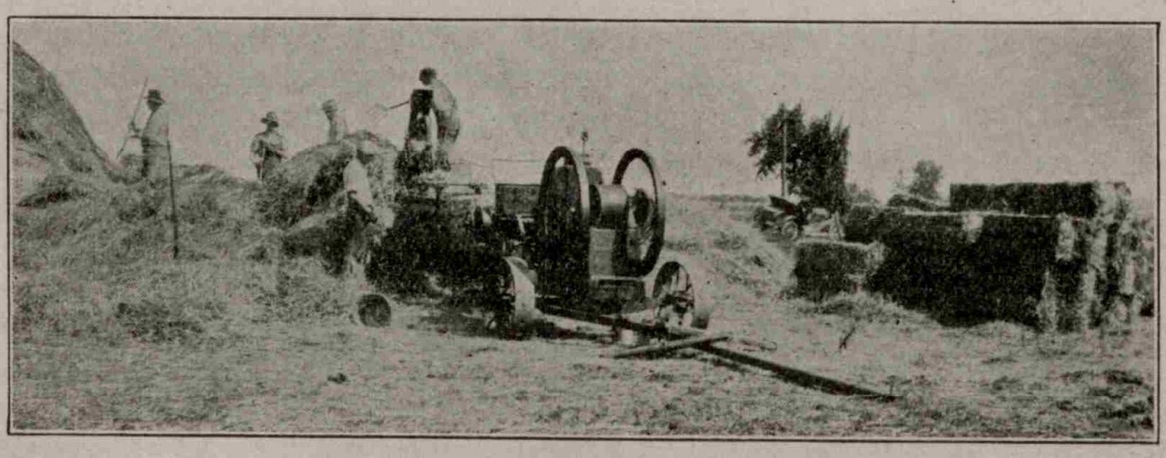
Some work the ground early in the spring until after corn planting time and then sow a crop of cane very thick. The cane smothers the thistles and then alfalfa can be sown or clean cultivation practiced the next year.

Straw.



It takes an extra man or two to build a straw stack properly at threshing time, but the present value of straw is more than enough to offset this extra expense.

We find very little straw that goes to waste in this county. The picture shows a common method of taking care of the straw stacks after threshing. In a great many cases we find that the straw is stored in the barn for further use. Straw makes very good bedding when one is handling live stock to absorb liquid manure and they can use this straw for the fertilizer. It can be supplemented with rock phosphate at the rate of 80 to 100 pounds of rock phosphate to a manure spreader load of manure, and then the manure will be more profitably balanced, and the phosphate will be added to the soil. Eight or ten loads of manure per acre is a very profitable amount to use on the average farm. Lighter applications of manure are more profitable than heavy applications.



Baled Straw Occupies Less Space in the Barn.

Care of Farm Tools.

The lack of caring for the farm tools is one of the most expensive uses of farm machinery. This cut shows a practical, up-to-date farmer who has not had any rusty farm tools on his farm for the past eighteen years.

Immediately after the pruning of his orchard, the saws and shears were coated with axle grease and common machine oil, applied with an ordinary paint brush. This little pan of grease, with a paint brush, can be kept at the barn to use on binder needles and knotters, cultivator shovels, disks, and all parts of machinery that is used where the surface is polished when in use. Statistics show that more machinery rusts out than what is worn out. We have one picture in this book that shows the improper care of machinery, where it is placed in the apple orchard for a tool shed. There are worse pictures than this, however, in the county, where the farm machinery is either left standing in the barnyard, or in the fields where the owner unhitched. The best farmers do not leave their expensive farm tools set out any more than the owner of an automobile.

"Early to bed and early to rise;
Hustle around and advertise."

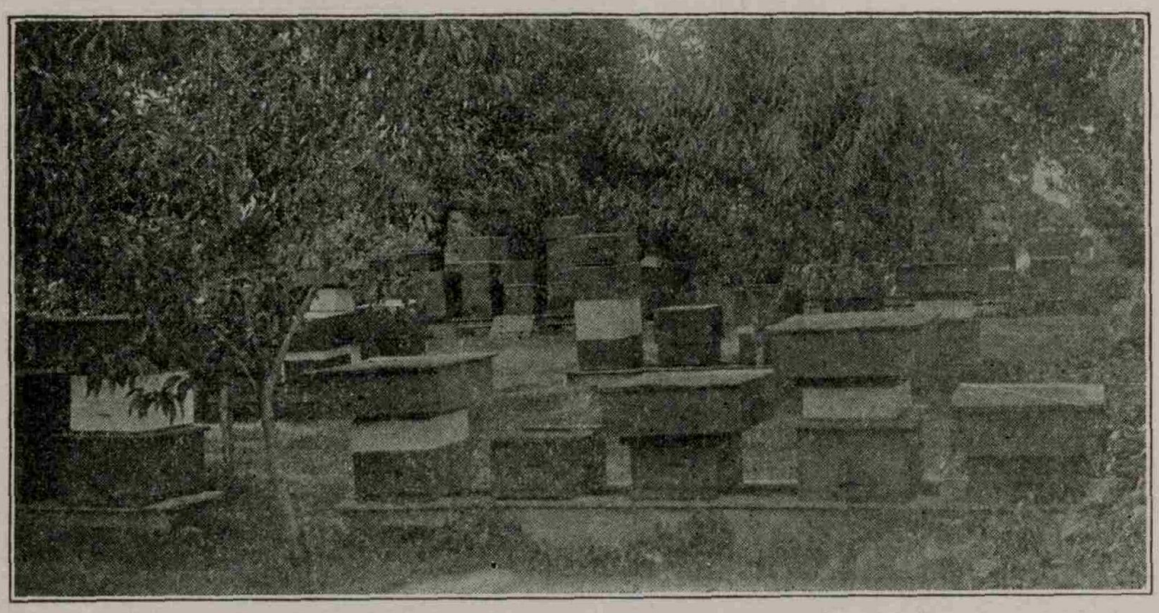
Why not have these bulletin boards at more farm homes telling the public what we have to sell? This information can be had by all passers by without having to go to the farmers house to find out.

A very attractive bulletin board of this kind will soon create a home market for your products. Try this and see if it does not pay.

Going through the county you can see boys and girls with stands by the roadside selling apples, flowers and vegetables to the auto tourists from the cities.

Many a good product goes to waste because the consumers do not know where they can get it.

Apiary.



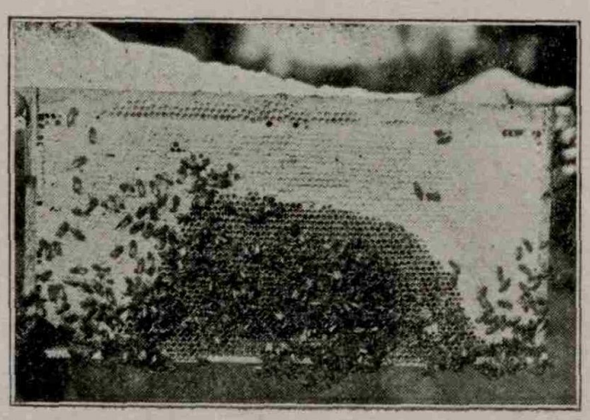
BEE BUSINESS A SPECIALTY.

We have a few people in the county who make the Apiary business a specialty. It is for the future of the bee business that these few words are put in. These pictures were taken from a apiary where the spring count of colonies numbered 69 and the total production of this season's honey, 1916, is around three and one-half tons. The early frost, Sept. 15, cut off the fall supply of honey or the production would have been larger. In this latitude, in this state the geographical position that we hold makes the fall supply of honey a very uncertain quantity.

Again this has been a very good clover year and the bees have taken advantage of it. The regular bee men say that this kind of a favorable season happens about once in four years.

Although the bee business is a special line of its own, we find many who keep bees so long as the bees look after themselves. Should anything happen to them, they are left to take care of themselves. These box-hive bee keepers with their 'Let us alone methods'' are not helping to make the bee businss a success.

The introduction of new Italian stock, the eliminating of the black blood and the box-hive bee keeper has helped to exterminate the disease.

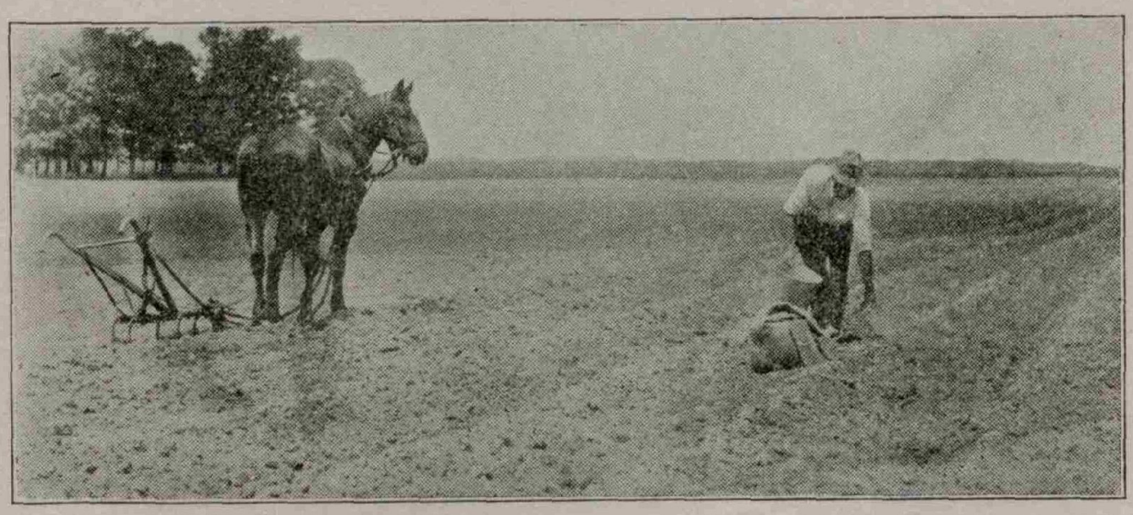


The American foul-brood is increasing in this district on account of shipping in of infected honey. This is an age of specialties and it would be better for anyone to study up on these projects before venturing very far. It will be better for them and also for the community.

Truck Gardening.

An Onion Field in North Township.

The truck gardening industry in the State of Indiana is valued over 2½ times as great as that of the horticulture industry. We find that there had been no demonstration work in this county prior to 1914 to help the truck gardeners solve their many problems. The third day the writer was in the county he attended a Farmers' Institute in the truck gardening district, and the speakers came from down State, who knew nothing of the practical side of these problems. Whenever the speakers had delivered their message the audience was granted the courtesy of asking questions. Regardless of whether it was a man or woman speaker, there was one gentleman who brought forth every time the question of "how to raise $20.00 acre cabbage." The speakers had to admit they didn't know, but were glad to see you had a new County Agent who could solve all your problems.

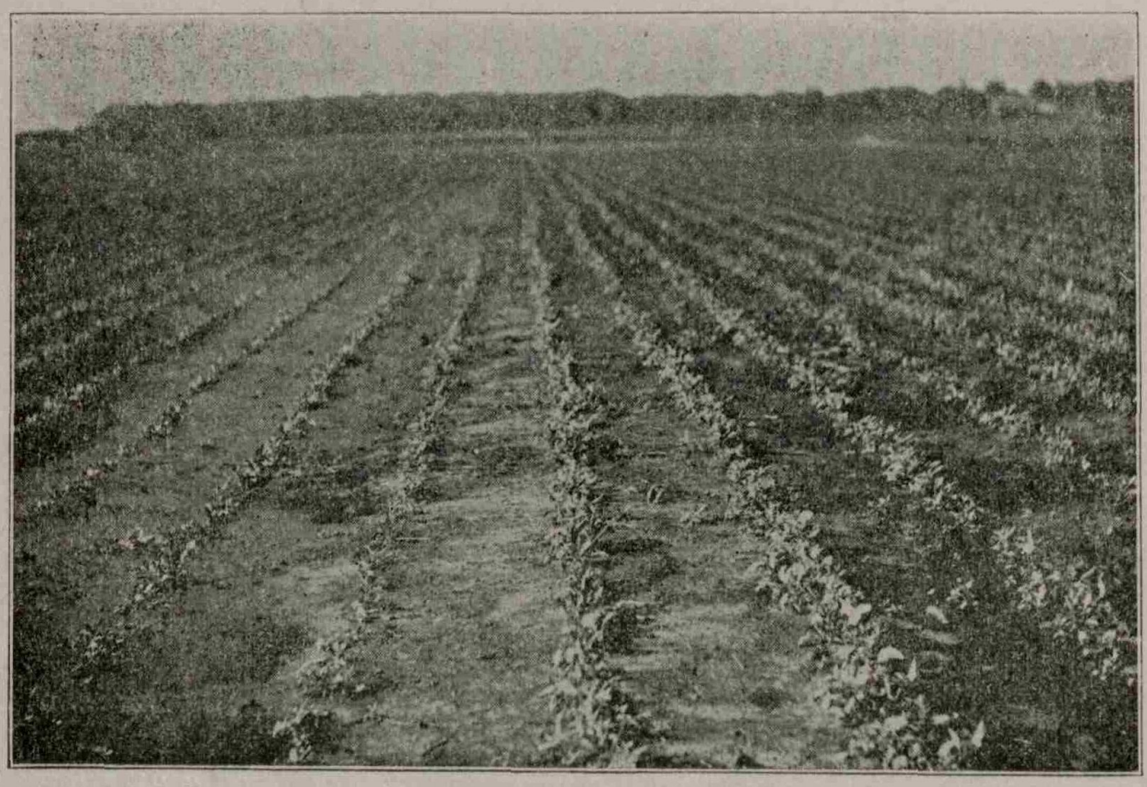


A County Agent Will Not Succeed By Loafing in His Office or on the Job.

The accompanying picture, however, shows how the writer got much of this work done, and that was by doing the work personally, to get the results.

SUGAR BEETS.

The growing of sugar beets is one of the large industries of the truck gardening district, and the lower picture shows on the right



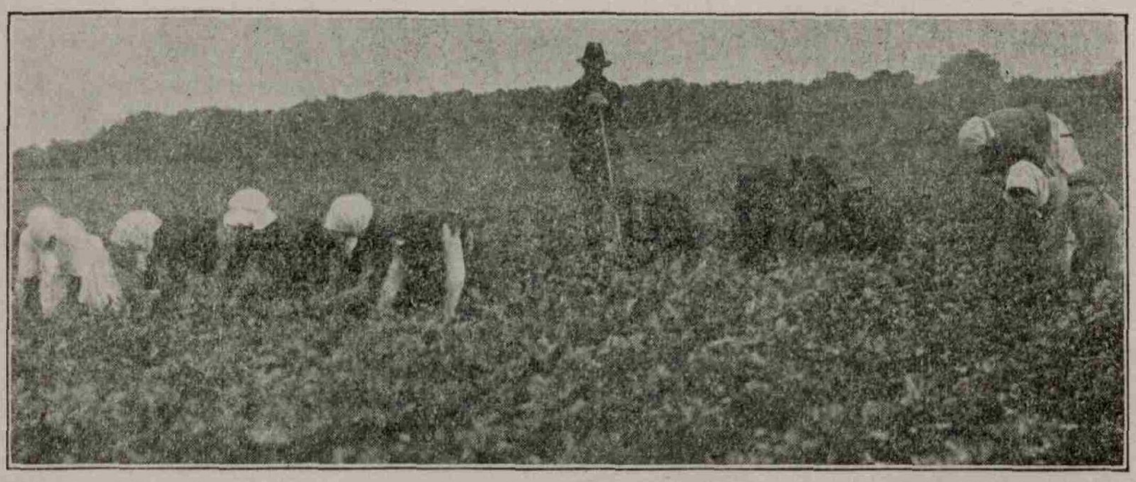
No Treatment. Acid Phosphate.

where science is more helpful with the art of farming than on the left. On the right treated parts of fields, and on the left parts un-

Same Field a Little Later.

treated. This land had been heavily manured for years, and although it was muck soil, potash was not the lacking element; it

was phosphate. You can see how much more vigorosuly the crops grew on the right where the proper treatment had been given than on the left. We found that complete fertilizer, potash or any combination wherein we did not have an extra supply of available phosphate, gave us practically no better results than the checks,



Human Labor.

and if there was a slight increase the cost of adding the plant food amounted to more than the increased yield. We used at the rate of 400 to 600 pounds acid phosphate per acre, and received from $10 to $20 more profit per acre with acid phosphate over and above the cost of the plant food. This is a very good scene in thinning and weeding sugar beets, which adds expense to raising the crop. An expert man follows the gang of hunkies, to see that they do the work correctly and do not loaf on the job. Shipping the sugar beets is one of the expensive items in marketing, when

Over 500 Tons in This Pile.

beets are loaded into the cars and shipped to the factory. It was impossible to get these cars all unloaded in time, and thus the profits were taken from the crop. This past year a different method was employed wherein the beets were weighed and piled along the sides of the railroad, until the factory was ready to use them. It is a common sight to see several hundred tons piled along the tracks at a railway station as shown above. It would not be possible to handle potatoes in this way as freezing would injure them, while with the beets no serious results follow.

Our sugar beet tests we have carried on for the past two years favored the application of acid phosphate over any other element or combination of elements of plant food. Where we have acid phosphate in our tests this year, we find that it is giving us the best results. This makes three years of favorable results in favor of phosphorus over any other element or combination of elements of plant food on this crop.

The 1916 crop lacked 40 pounds per acre of making one-fourth more tonnage with the use of 450 pounds of acid phosphate.

Better Than Our Boyhood Days.

POTATOES.

The growing of potatoes is quite an industry, and much good has been accomplished bettering the conditions. Those who have

Pleased To Be Shown—1914.

to drop potatoes by hand will appreciate the machine used by practical potato growers who use a potato planter for this work. It would be like the sickle in comparison with the self-binder in cutting grain. In 1914 the writer advocated a different combination of plant food using more phosphate for different types of soil where manure had been used as a method of securing better yields.

Better Satisfied—1915.

We do not recommend bone meal as a source of phosphorus. These men will testify that they grew better potatoes than they ever grew before, and that they made considerable more profit from it, over and above the cost of plant food. We also satisfied ourselves through several of our demonstrations that northern grown seed was more profitable to grow than that which was grown in the home community for several years. This past year we were able to show on our demonstration day a crop of early potatoes that made 326 bushels to the acre, where a more advanced method of handling the soil was used, as against the old art of soil treatment. There were many people who had to be shown, but after going and seeing for themselves they were convinced. Acid phosphate made from raw rock gives us the best results, and should be used at the rate of 500 to 750 pounds per acre.

ONIONS.

It is a pretty and not uncommon sight to see large fields of narrow beds of onions growing in this district, that furnish good returns for the work on the land. The above cut shows the

A Common Scene At Harvest Time.

method of harvesting the onion sets; also the mid-forenoon and mid-afternoon lunch eating period that is the custom throughout the district. The use of 500 to 800 pounds of acid phosphate or a two-ten offsets the poor results from burnt manure.

As soon as these onions are pulled they are put in these crates and set up in a "V" shape, and left in the field for several days to dry out. Then they are hauled to some central place where one is stacked on top of another and covered until market time. On the inside of the cover page you can see a picture of seed onions, that represent one of the best and most profitable crops the owner ever grew. The writer is proud of this because of the fact that it was the first field upon which he gave advice on handlings soils when he came to the county. The owner testified that he cleared over $150 per acre above the expense of plant food by following the treatment given. We have very few trying to grow onion seed as that is the job for one specialized in the art.

CABBAGE.

The growing of cabbage is one of the largest industries and one that needs considerable help. The accompanying pictures show two cabbage fields on the same farm, one of which was planted with untreated plants on old ground, and the other with treated plants on new ground. By treated plants we mean those that have been grown from seed and fed plant food, causing them to grow healthy, strong individual plants, which are more resistant to disease than the weaker plants. We are glad to know that Wisconsin is developing some disease resistant plants.

The Farmers' Produce Co., and Libby, McNeil & Libby, at

Not Treated.

Highland, handle several hundred tons of cabbage each year direct from the farms, which can either be shipped to other markets or made into sauerkraut. These kraut plants are like a group of silos under one roof for storing cabbage for human consumption, similar to the way we store corn silage for our stock during the year.

PLANT FOOD.

We have found good results by feeding the plants plenty of available plant food. Plants are similar to animals or man in

Treated.

being able to throw off attacks of disease when in a strong, vigorous condition.

The method used by the County Agent to apply fertilizer for demonstration work in 1916.

One of these wheelbarrow distributors are handier than spreading by hand and allows you to distribute the fertilizer more evenly.

This was on the the cabbage patch where we had the co-operation of the German Kali works.

INSECTS AND DISEASES.

The club-root of cabbage can best be controlled by the use of heavy applications of slacked lime or ground limestone and a rotation of crops. In this case we recommend seeding to clover, corn follow clover and then potatoes.

The yellows which all cabbage growers recognize is caused by an organism that lives over in the ground and infects the crops through the roots. The Wisconsin Experiment Station sent out some seed from a highly disease-resisting strain. We have that growing in three different places and on July 27, 1916, when the other varieties of cabbage in the same fields were looking very sick the Wisconsin strain was looking fine and healthy, with only a few diseased plants.

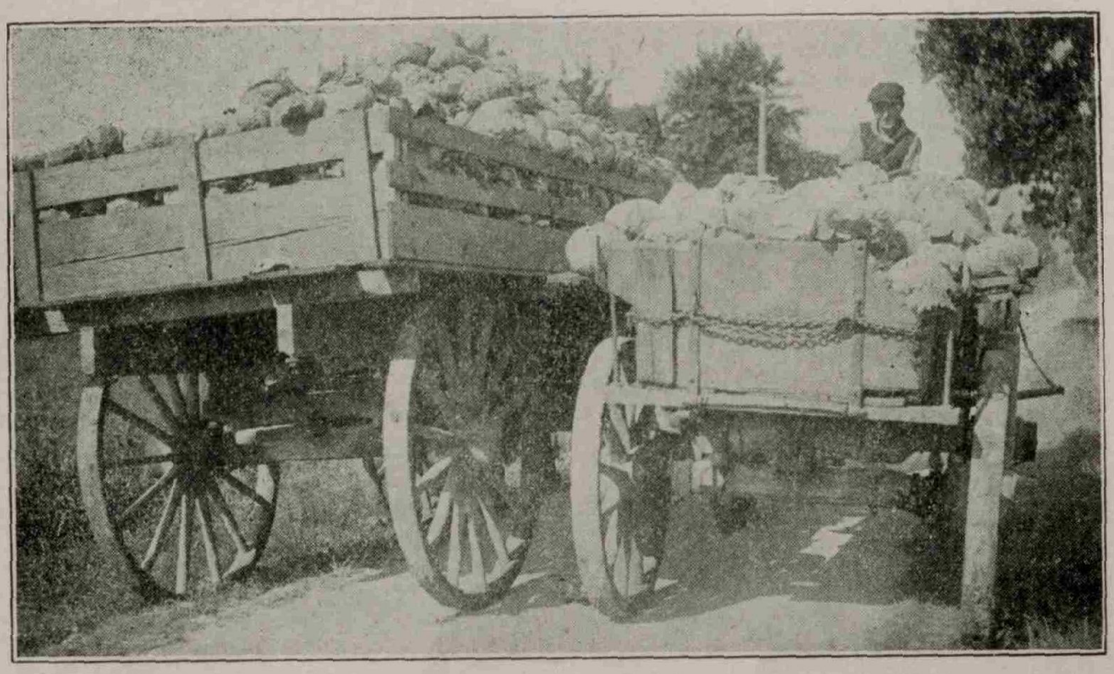
The cabbage maggot has been controlled by covering the seed-bed with mosquito bar to keep out the fly that lays the egg that hatches into the maggot. Or, as shown in the picture the plants are washed before resetting. All diseased plants should be destroyed and not plowed under.

Washing Off the Maggots.

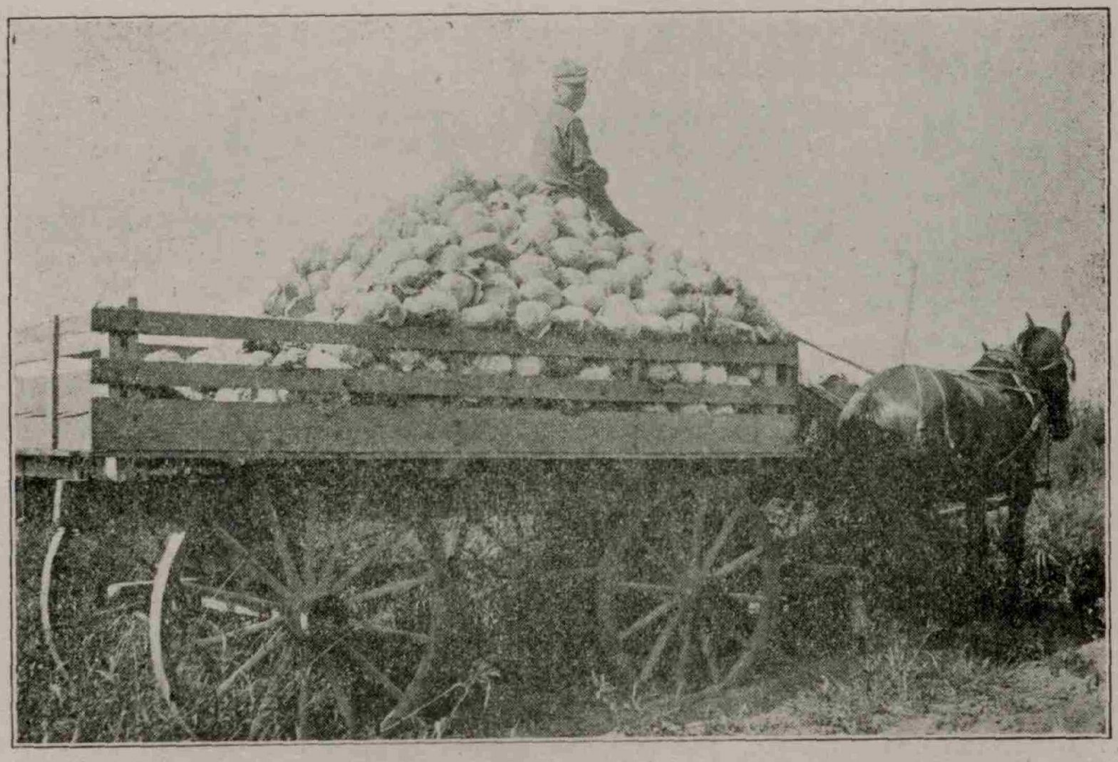
We washed some of the plants and dusted the roots with sulphur. The results did not show anything favorable for this treatment with the sulphur, but the washing alone gave good results.

A Cabbage Planter in Operation.

Harvesting the Crop.

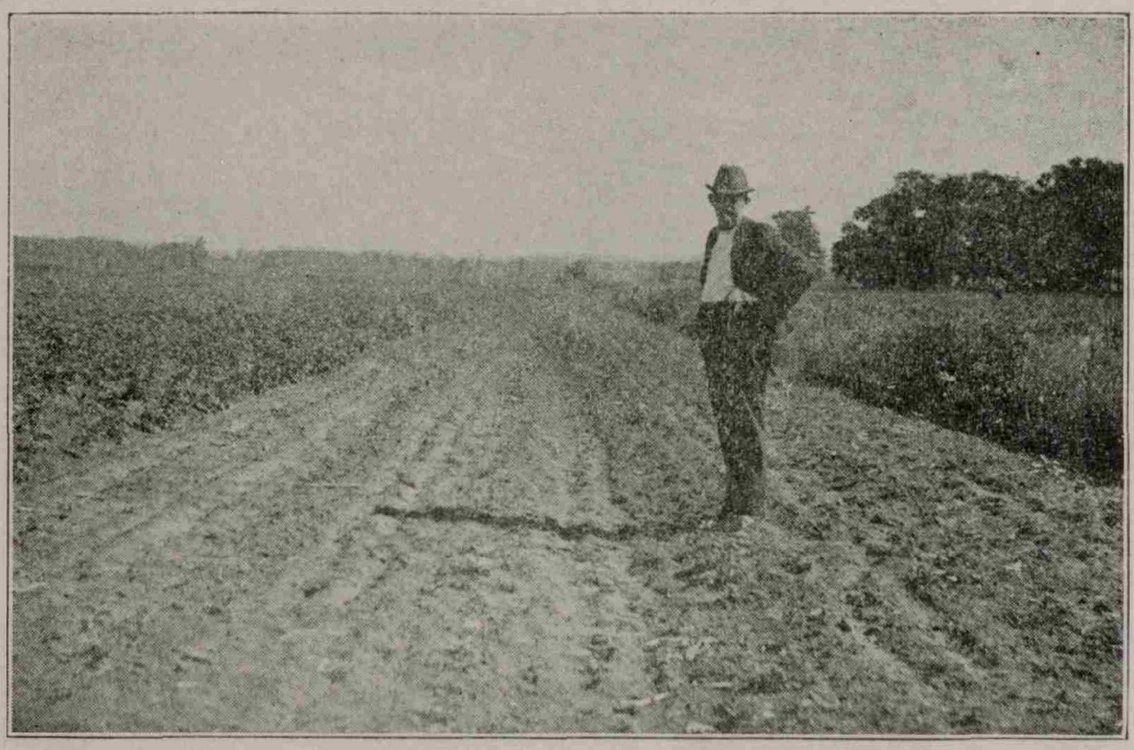


This picture shows the load of cabbage from the aid of phosphate and potash treatment on the high wagon, and that from the nitrogen and potash treatment on the small wagon. The soil speaks for itself and says more phosphate.



The Load From the Acid Phosphate Treatment.

The acid phosphate plot had the largest and most solid heads. The other plots that did not have any phosphate were more or less loose and not so solid.



Better Plants When Set Out Treated With Manure.

Poorer Plants and An Application of Acid Phosphate and Potash.

STRAWBERRIES.

Grow the varieties that suit your market or your own use. Every home should raise enough berries for their own use. Set the plants out in rows so they can be cultivated and the berries picked to better advantage. In starting a bed have a well prepared seedbed to which you have applied a liberal application of acid phosphate. Apply to the rows at the rate of 500 to 750 pounds per acre on well manured land.

After the fruiting season, mow the old stems and leaves and burn them. This will help to keep the plants free from many insects and diseases. Mulch the bed with straw, hay or corn-stalks.

DEMONSTRATION DAY.

One of the best educational features in studying soils is through the demonstration work, or by a group of farmers gathered together to go from one farm to another, seeing the different conditions of things as they exist, and finding out the reason why. The people may learn more on a trip of this kind than going to any circus or show that comes along every summer. Pleasure is all right in its place, but certain kinds are profitable kinds to the farm home and community.

CORN.

Corn is grown on all types of soil, and with more or less success on some of these sandier types. This picture shows the results of

Easy To Find Where No Plant Food Was Applied.

fertilizer on a sandy loam soil in this truck area. The writer is holding in his left hand a stalk of corn from the treated rows, in comparison with one in his right hand from the untreated rows. During the summer the difference between the treated and untreated plots was so great, the neighbors came to see the demonstra-

Modern Farmers—Touring Demonstration.

tion, and the work was followed through to completion. There was a little more than double the yield on that which was treated than that which was not treated. A group of automobiles and a truck of the Farmers' Produce Co., carried the people from farm to farm

throughout the county in the truck gardening district, looking at the different demonstrations under actual conditions. There were a great many who never took advantage of these demonstration days, and if they never get anything out of it, it is their own fault. Occasionally we find some who know all there is to know, and are not going to get out of the old rut because their fathers and grandfathers used the same poor system.

Cabbage and Corn Demonstration.

The above picture shows the comparison in potash corn and acid phosphate corn, as grown in a test given in the following table:

PHOSPHATE VS. POTASH, ON MUCK SOIL, 1914—CORN.

			FERTILIZER				
	Bu. Yield.	Corn 50 Cents.	Amount lbs.	Cost Per Hundred.	Cost per Acre.	Value Corn Less Fertilizer.	Profit Over Potash.
Acid phos.	66.12	33.06	200	$ .80	$1.60	$31.46	$9.29
Potash	48.75	24.37	200	2.20	4.40	22.17	

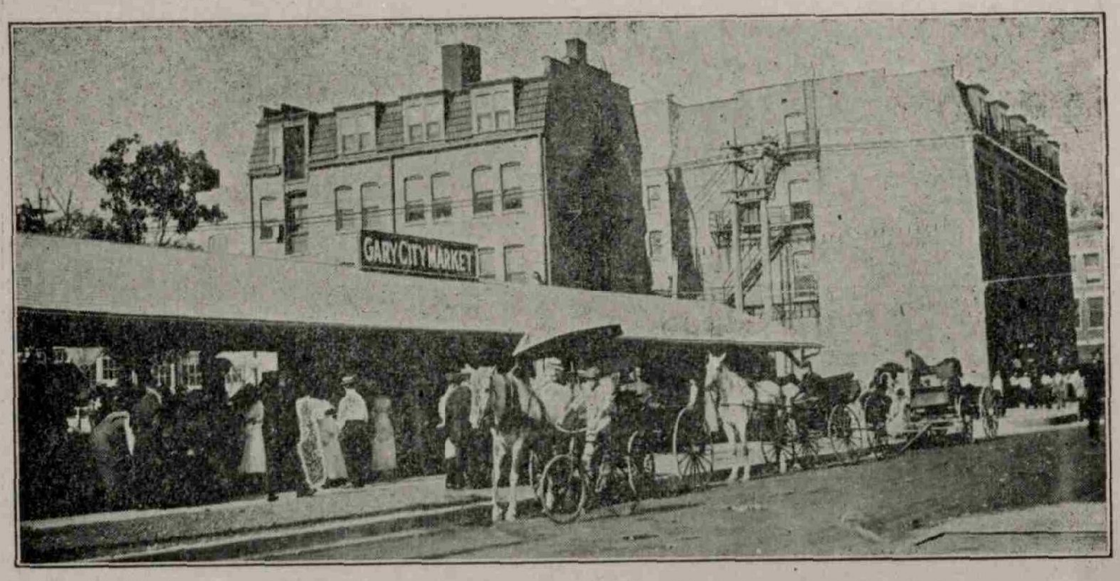
The two heads of cabbage here represent the two different systems of growing cabbage. The little head represents a little over four tons of cabbage per acre, with manure, and the large head represents a crop of 12 tons of cabbage per acre with an application of 750 pounds of 2-10-7 on new land.

GARY CITY MARKET.

The original Gary City Market opened up June 21, 1914. The object of this market was to enable the producers to sell direct to the consumers. The city officials of Gary have looked into the future, and can see where a great city market, such as is being used successfully in other large cities of the country will have a prominent place in the future city of Gary. The writer accompanied one of the producers who started from home with a

wagon load of apples at 3:30 in the morning, so as to be there when the market opened early in the morning. It was encouraging to know that the apples were sold at a reasonable price, and we were ready to start for home by 10 o'clock a. m. The owner could not sell these apples to the home stores. However, this same grade of apples is shipped into the county during the winter and sold for sound apple price.

It would be well to look up the orchard demonstration work in this book and see what results were secured by spraying.



GARY MARKET.

The use of acid phosphate on soil containing a large amount of manure or decaying organic matter always gives us an extra leaf growth over the check-strips where no plant food is applied. The strips are noticeable in all parts of the field on the different

Acid Phosphate, 1916 On Cady Marsh—Nothing.

types of soil. The heavier the application of phosphate up to 450 pounds the greater the leaf growth and the better the quality of the grain crop.

Views of Fertilizer Tests On Corn.

Upper Picture—Complete Fertilizer. Middle Picture—1700 Pounds of Raw Rock Phosphate On Clover 1915. Lower Picture—Manure Plowed Under and Complete Fertilizer Applied At Planting Time.

ROCK PHOSPHATE.

Upper Picture No Treatment—Lower Picture Manure and Rock Phosphate.

Rock phosphate is undoubtedly our cheapest source of phosphate for a permanent, practical and radical system of farming. This is the natural form of phosphorus as found in the soil naturally hence very heavy applications will have no bad effect on the soil. The most profitable amounts to apply at a time is from one-half to a ton per acre, every four or five years. We should keep in mind when using this raw material that applications of manure decaying organic matter or green cover crops are necessary for best results, however, the raw material in the ground will not leach away like limestone or other soluble plant food in the soil.

The available information at hand clearly shows that the farmers of Lake County can use rock phosphate to good advantage on all grain and live stock farms.

A two and one-half ton clover crop contains 100 pounds of nitrogen besides what is left in the ground. The grain in a hundred bushel corn crop uses 100 pounds of nitrogen. It would not be wasting a clover crop if it was plowed under with an application of 1000 to 2000 pounds of raw rock phosphate. There would be enough phosphate applied to grow maximum crops for four or

six years and leave the ground richer in phosphate than before the treatment. Again, the clover plowed under will furnish decaying vegetable matter to liberate the unavailable potash in the soil. Where clover is fed to live stock and the manure returned to the soil it should be reinforced with rock phosphate.

CORN ON THE KANKAKEE MARSH—1916,

The complete fertilizers were applied at the rate of 400 pounds per acre and the acid phosphate at the rate of 150 pounds per acre. This small amount of acid phosphate was caused by the fact that the rest of the field had that amount applied and drilled in the rows. We might add that we get better results when we drill these small amounts than when we broadcast them.

The picture at the bottom of page 27 shows the comparative height of the corn with nitrogen and potash on the right, with the nitrogen and acid phosphate on the left at cultivating time.

The difference in the stalk growth was in favor of the phosphate treatments all summer. When the frost came Sept. 15, 1916, the phosphate corn was the ripest. The different plots were harvested, weighed and piled separately, and the following data secured.

Treatment Pounds.	Bushels.	Increase.	80c Bu.	Cost of Treatment.	Loss or Gain.
Nothing	37.1				
400-Nit-Pot	39.4	2.3	$1.84	$34.33	$32.49†
400-Nit-Phos. ...	41.9	4.8	3.84	5.63	1.79†
400-Phos-Pot. ..	40.0	2.9	2.32	17.68	15.36†
400-N-P-K.	41.3	4.2	3.36	17.09	13.73†
150-Phos.	39.4	2.3	1.84	1.43	.41*

†Loss. *Gain.

The quality of the corn with no treatment was the poorest with small immature ears. The nitrogen and potash treatment was a little better but very immature. The other plots where phosphate had been applied were the most mature and had the best quality of grain.

Acid Phosphate, 1916 On Kankakee Marsh—Nothing.

An application of 150 pounds of acid phosphate gave the maturity to the corn and made a profit of 41 cents per acre.

An application of 400 pounds of nitrogen and potash gave the same yield but the corn was soggy and of poor quality. The loss with this treatment was $32.49.

Where phosphate was substituted for potash there was a better yield of high quality grain and the loss was reduced to $1.79, or a saving of $30.70 in favor of the addition of phosphate.

Where phosphate was substituted for nitrogen the quality of the grain was much better and the loss was reduced from $32.49 to $15.36 or a saving of $17.13 by the use of the phosphate.

Again, nitrogen and potassium made a loss of $32.49. Phosphate alone made a gain of 41 cents. When phosphate was added to nitrogen and potassium the loss was reduced to $13.73 or there was a saving of $18.76 by the use of the phosphate. This soil is a typical Kankakee marsh soil and we believe that we would have received better results with heavier applications of phosphate. This smaller application was not intentional as we wanted the amounts the same. However, on this same type of soil on another farm near by where 250 pounds of acid phosphate was applied the yield was over 60 bushels of a well matured corn. On this same farm where no phosphate was applied the corn was poor, immature and of inferior quality, and was caught by the frost.

This whole argument with the data is given to show that complete fertilizer or nitrogen and potash combinations are only profitable at the expense of the phosphate which would make more profit if used alone. Again, the money expended for complete fertilizer would go much farther if used for the purchase of the phosphate.

Why waste money and energy on any of these combinations at this time when we can make more money and secure a better quality crop from the use of the phosphate alone.

Physical Improvement of the Soil.

Let us not lose sight of the physical improvement of soil, when we are trying to increase crop production. If we expect to raise large crops, it is necessary to keep the feeding end of the crops in a good healthy, producing state. Outside of the drainage, tillage, plant food, we must look after the humus or organic matter. It is organic matter in the soil that prevents rolling land from washing, helps to warm the soil by absorbing heat, is a store house for nitrogen and moisture, and helps to liberate mineral plant food, and to prevent soil from puddling. In heavy soils organic matter helps to make them light and in sandy soils it helps to retain the moisture. It is shown in the growing of alfalfa or legumes, that the nodules seem to develop better when there is more organic matter, or, in other words, it is easier to get inoculation by having organic matter, whether it be barn-yard manure or other crops turned under. We found on our alfalfa tour that where manure

was plowed under on sour soil, nodules were found in the layer of manure.

The selling of roughage or the burning of stubble and material of that kind on the farm is simply taking the life out of the soil. While drainage and tillage and fertilization are absolutely essential to help keep the physical improvement of soil, organic matter is the life of the soil, and it must be incorporated into a rotation of crops to make our land remain productive. One of the gratifying things here in Lake county is the small amount of burning of corn stalks. Most of you know how many tons of corn stalks there are to the acre, and it is stated by Experiment stations that one ton of dry corn stalks worked into the soil will bring as much humus as four tons of average farm manure. It is claimed there are 1½ times as much nitrogen in a ton of corn stalks as there is in a ton of manure. Nitrogen is worth 15 to 20 cents a pound commercially; the question is, can you afford to burn corn

Rock Phosphate Being Applied With Manure On a Pure-Bred Hereford Farm.

stalks? To those who are keeping considerable stock, (and we are thankful that there is a large amount of stock kept in Lake county)it would be well to look to the destruction of organic matter if manure is allowed to lie in the farm yard.

The Maryland experiment station conducted an experiment with 80 tons of manure which they put into a yard for one year, and at the end of that time only 27 tons were left, a loss of 66 per cent. or nearly two-thirds of the manure. The most practical point to take into consideration here is that most of the loss here incurred was in the first three or four months, when the fermentation or heating was most active. Two tons of manure were exposed from April 29th to August 29th at the Canadian Experiment station at

Spreading 100 Pounds of Rock Phosphate With Every Load of Manure.

Ottowa. The organic matter was reduced from 1938 pounds to 655 pounds. The practice which gives the best results is the one which is practiced considerably here in Lake county, and that is to apply the manure to the soil as soon as possible after it is produced.

NITROGEN AND HUMUS.

We recommend that at least one-fourth of the cultivated land of the farm be devoted to legumes to help maintain the nitrogen and organic matter supply. We do not consider that it is profitable to purchase commercial nitrogen at the present prices, when it is possible to raise the leguminous crops at so little extra expense. There are from fifteen to twenty millions of dollars worth of free nitrogen over every acre of land that we might use if we would adopt a better system of farming.

We ought to sow either rape or clover in all our oat crops in the spring to supply green organic matter. Also sow either rape, soybeans or cow-horn turnips in all the corn fields.

LIMESTONE.

We use from 2 to 6 tons of ground limestone per acre to neutralize the acidity of the soil and then use at the rate of 1000 pounds per acre per year to provide for the loss through leaching and the removal through crops. We are able through our county organization to get our limestone delivered at the railway station at the average price of $1.00 per ton in car load lots.

PHOSPHATE.

The grain and dairy farmers are making an initial application of at least 1,000 pounds of raw rock phosphate per acre once in rotation of crops. This is applied either with manure, green cover crop or put on land that is to be seeded for small grain. The truck gardeners use the acid phosphate because they want ready available forms of plant food on lands which they either rent one year at a time, or which must give direct returns. We also find that the acid phosphate is more profitable and in most cases give better results than either potash or complete fertilizer in the majority of our tests.

SYSTEM OF FARMING.

Every farmer should produce maximum crops by the practical, progressive, permanent system of farming so as to make the greatest possible results and leave the land richer when we are through with it than it was in the beginning.

Read the 28th verse of the first chapter of Genesis: "And God blessed them, and God said unto them, 'Be fruitful and multiply, and replenish the earth, and subdue it.'" The history of the world shows that man has been subdued by the earth and that civilized man has made a business of ruining soils. The course of the great Empire has been to the west until there is no further west to go to. The time is here when we must make the most out of what we have.

We must adopt a more progressive system of farming which will make us more profit and still build up the land. We have been in a rut because of the great amount of available plant food in our productive land, but now the world is calling for more food stuffs than can be supplied in a haphazard way. Farming must be run on a business basis so that the saleable products will sell for more than it costs to produce them.

We do not all do as well as we know how and what is going to get us to adopt these better methods? The big progress lies in the education of our boys and girls raised on the farm to learn these better methods and put them into practice. Some of these boys and girls are getting whiteheaded but so long as they continue to learn they are yet young. The other class are in our schools, or will be there.

The history of the productive soils of the world tell the same pitiful story. The once rich and fertile fields of China, India, Greece, Turkey and Russia have been robbed. Virginia was discovered a little over three centuries ago and pronounced the garden spot of the world. It was thought to be a land containing an inexhaustible supply of plant food. That was the belief only three centuries ago and what are the conditions today? Not only there, but with millions of acres of the eastern United States. The fertility of the land has been robbed and the crops will not produce enough to pay the taxes, so the land is returned to the commonwealth of the state.

Whenever the fertility of the land begins to decrease the fertilizer agent comes along with a "Try-a-bag" of our wonderful restorer and the average person thinks the increase yield is good and he falls into the use of the commercial fertilizers.

Do not be misled in these increase yields, but study our own data here in the county where the use of phosphate, a rotation of crops, and the use of legumes will make us more profit, build up the land and make crops more certain. Phosphate is the paying element of commercial plant food. Three-fourths of the phosphate in a crop is in the grain. Where the grain has been sold from the farm the phosphate is gone. If the total phosphate in the first seven inches of the prairie farming land could be drawn on for the maximum crops, the land would be ruined in less than 75 years. Nature will not give up all of the plant food, but allows a certain percentage to become available each year.

The cheapest source of phosphate is raw rock phosphate, which can be purchased in car lots for about $8 per ton in sacks.

Acid phosphate is made by mixing one ton of sulphuric acid with one ton of rock phosphate. This gives two tons of acid phosphate containing no more phosphate than a ton of raw rock phosphate, but costs about $20 per ton or $40 for the two tons.

If the farmer wants complete fertilizer, the manufacturer puts in two tons of filler with some available nitrogen and potassium with the two tons of acid phosphate and sells the four tons of com-

plete fertilizer containing no more phosphate than the one ton of raw rock phosphate, for at least $24 per ton or $96 for the four tons.

In other words the farmer can buy the same amount of phosphate in the form of rock phosphate for $8 that he can buy in acid phosphate for $40, or in complete fertilizer for $96.

PLANT FOOD IN MANURES AND FERTILIZERS.

Kind	Pounds per Ton		
	Nit.	Phos.	Pot.
Fresh Stall Manure	10	2	10
Dried Blood	280		
Nitrate of Soda	310		
Ammonium Sulphate	400		
Steamed Bone Meal	20	250	
Acid Bone Meal	40	140	
Raw Rock Phosphate		260	
Acid Phosphate		130	
Potassium Sulphate			850
Kainit			200

When we find out what our soils need and how much of that plant food we can get in the different fertilizers at the commercial prices, we will know which we can best afford to buy.

WHAT CROPS REMOVE FROM THE SOIL.

Crop	Amount	Pounds Plant Food. Nit.	Phos.	Potassium
Corn, Grain	100 bus.	100	17	19
Stalks	3 tons.	48	6	52
	Total	148	23	71
Oats, Grain	100 bus.	66	11	16
Straw	2½ tons.	31	5	52
	Total	97	16	68
Wheat, Grain	50 bus.	71	12	13
Straw	2½ tons.	25	4	45
	Total	96	16	58
Timothy Hay	3 tons.	72	9	71
Clover Hay	2 tons.	80	10	60
Alfalfa Hay	4 tons.	200	18	96

The farmer prepares his own seed bed, so why not prepare his own complete fertilizer by applying 1000 to 2000 pounds of raw rock phosphate to the acre once in a four or five year rotation of crops using legumes, manure or a green cover crop.

When spreading manure put about 100 pounds of rock phosphate to each load of manure. Or, spread it through the stables

every day after cleaning the stables as it will absorb 25 to 40 per cent. of its own weight in liquid manure that might otherwise be lost. If you are feeding cattle put a layer over the feed yard before bedding the yard each week and then the phosphate will be mixed with the manure.

Another good method is to apply to the corn stalk ground during the winter where oats are to be sown and then seed to oats and clover in the spring. This will help to get a better stand of clover which is a heavy feeder on phosphate. A three and a half ton clover crop will remove more phosphate from the soil than a hundred bushel corn crop. The soil must be fed or the crops will starve, or improperly mature.

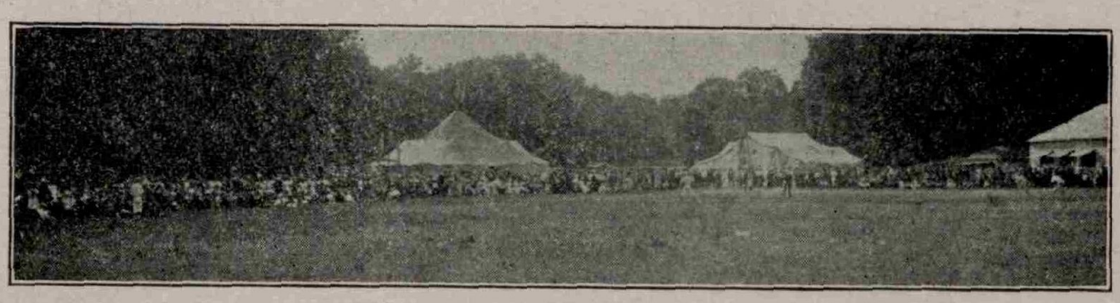
Every year as the land gets older we hear complaints of the season's changing; the poor quality of crops; the obnoxious weeds coming and the increased number of bad insects. Stop and think, this is a warning not due to the above conditions so much as to the ultimate ruin of the productive capacity of the soils. Our immature corn crops for the past two years can be avoided in the future with the application of phosphate and the proper selection of seed corn that will mature in this climate.

The investigations of these great problems has been carried on and the scientific facts have been available, but the people have been waiting for the real Agricultural Advisor to bring the facts and demonstrate them. Too many men holding agricultural positions are misconstruers of the real facts.

To the citizens: Whether a merchant, lawyer, banker, business man or day laborer, we wish to say in conclusion that without a successful productive farming community we can have no great enterprises let alone a great county with better soils; better schools; better farms; better community interest and a thriving class of intelligent men and women in happy, prosperous homes.

It has been wonderfully said, "Farming is a profession requiring more shrewdness than law; more technical training than medicine; more uprighteousness than theology; more brains and resourcefulness than pedagody. It is its own reward. God made farmers, the other professions are parasites."

The towns, cities, and the inhabitants of the country are dependent upon successful farming. The farmer feeds them all and rightfully is entitled to better roads, better schools, better credits and a better price for his produce than he has been receiving.



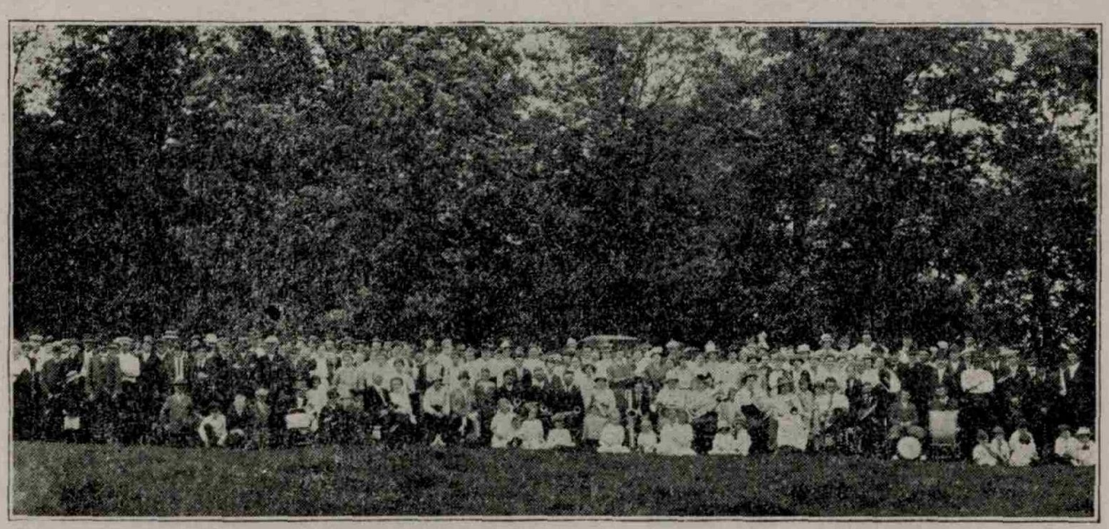
Community Picnic.

SOME OF LAKE COUNTY'S GOOD ROADS.

We love to boast of our good roads but is it not a fact that they have been built in a slip-shod manner, lacking a permanent building system? To derive the most benefit from the money invested the roads should be built according to a system that will meet the

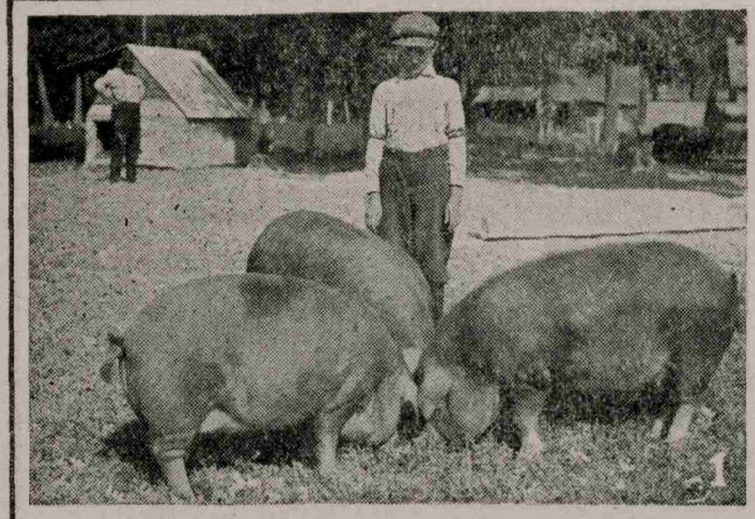
A Beautiful Drive Over a Part of the Dixie and Jackson Highway.

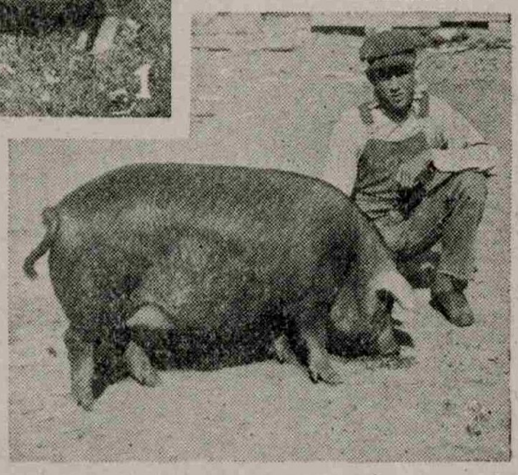
demands of the traffic. These country roads or feeders of the larger transportation lines ought to be so well improved that the producer can haul his produce to the market or shipping points at any time during the year.

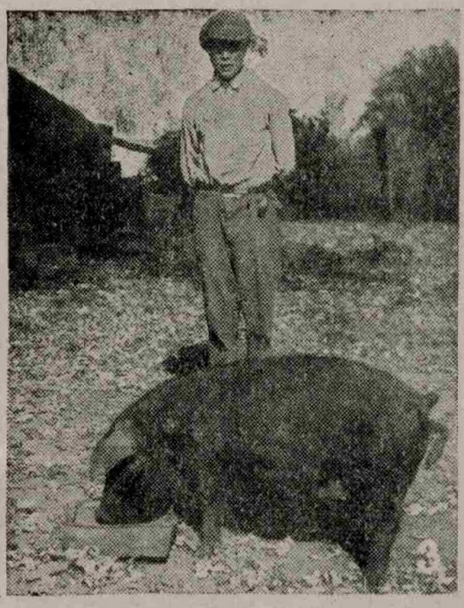


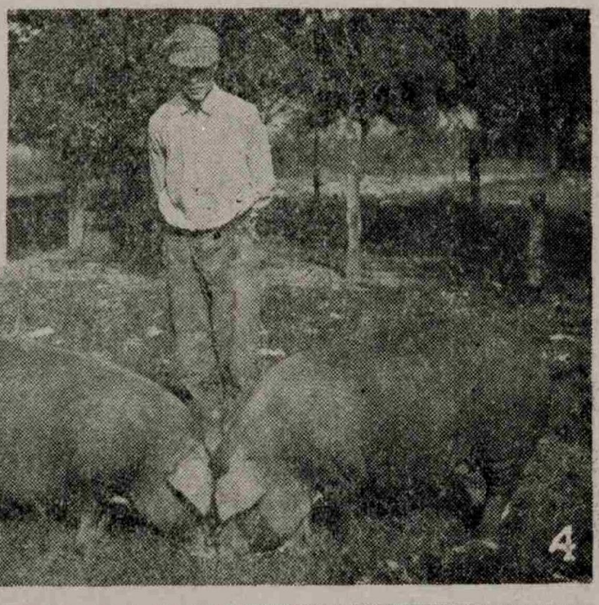
Gleaners Picnic.

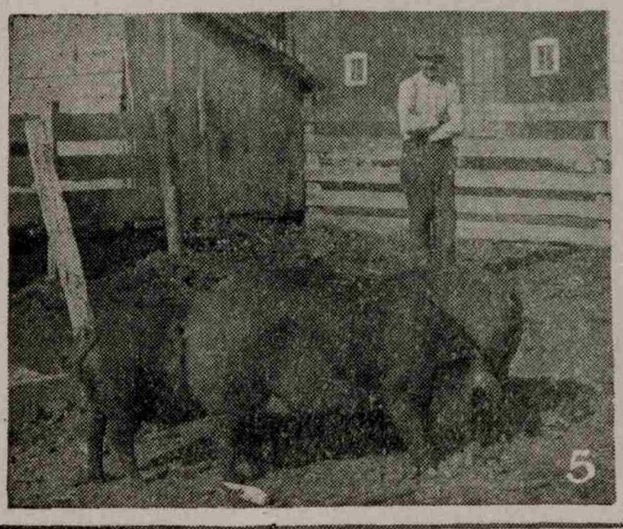
Every community ought to take a day off once a year and enjoy a day with their neighbor and exchange modern ideas.

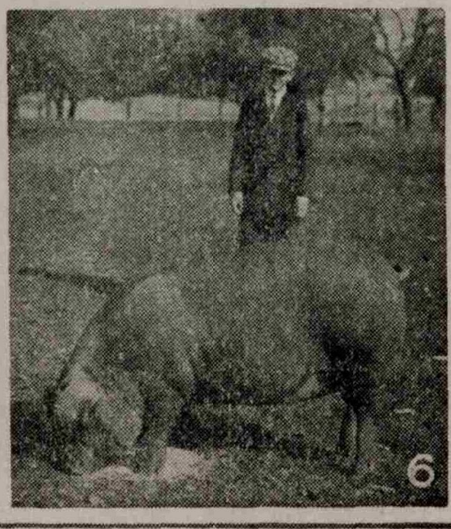












The Boys' Pig Club of 1916.

The boys exhibited pigs at the School Fair that were second to none in the county for their age. They began with weaned pigs and fed for four months, keeping records of the weight at the beginning, the amounts of feed fed and the final weight. Some weighed every two weeks or oftener and have those records in their final reports. Those having cool, shady places for the pigs during the month of August made good gains and some who had poorer places had a loss some weeks. One boy lost his pig with the heat, one fed a runt from a litter and had a loss of a few cents for the feeding period. These exceptional gains are not averages but are the best in the contest.

The gilt to the left in cut one made a daily gain of 1.8 pounds at 4.7 cents per pound and a total gain of 219 pounds.

Number 2 made a daily gain of 2.11 pounds at 4.19 cents per pound and a total gain of 253 pounds.

The gilt to the right in cut No. 4 made a daily gain of 1.8 pounds at 3.2 cents per pound and a total gain of 118 pounds.

The gilt in cut No. 6 made a daily gain of 2.15 pounds at 5.1 cents per pound and a total gain of 259 pounds.

Pig in cut No. 3 was fed father's way and made a daily gain of .83 pounds at a cost of 6.7 cents per pound and made a total gain of 99 pounds. This pig is a litter mate to the boys' pigs in cut No. 4.

The large pig in cut No. 6 is the pig in cut No. 5 with two of its litter mates that father fed. Father's pigs made a daily gain of .91 pounds at 6.6 cents per pound and a total gain of 110 pounds.

At the School Fair Oct. 14, 1916, the pigs were placed as follows:

Number 2, first; the one to the right of No. 4, second, and No. 6 third.

The week following a local show was held at Lowell to award the prizes given by the State National Bank and the pigs of Cedar and West Creek were placed as follows:

No. 4, first; No. 6, second; the big to the left in No. 1, third and a Chester White fourth.

The winners in the County Contest were: Edward Elting, first; Milton Spry, second; Forrest Hayden, third.

The winners in the State National Bank Contest were: Milton Spry, first; Forrest Hayden, second; Ivan Hayhurst third and Harold Wheeler, fourth.

Ivan Hayhurst, whose picture is on the cover page, won first place in the Boys' Pig Feeding Contest at the International Live Stock Show at Chicago, 1916.

He fed three pure-bred Duroc barrows born in March, 1916, which made an average daily gain of 1.8 pounds for four months feeding at a cost of 3.6 cents per pound.

He fed corn, oil meal, middlings, tankage and buttermilk in an alfalfa feed lot.

He won $10 in the County Contest on the gilt he showed and is keeping her for a brood sow.

The first prize at the International was $50. He is putting his money in the bank.

Parents ought to encourage the boys and girls in the club work.

HOW I RAISED MY PIG.

[By Edward Elting.]

Having heard about the good results in the Boys' Pig Club contest, I decided to enter this year. I bought a pure-bred Duroc-Jersey pig at weaning time and commenced feeding June 13, 1916. The pig weighed 50 pounds.

The first month she ate 95 pounds of corn; 15 pounds of wheat; 10 pounds of oats; 38 gallons of skim milk and gained 52 pounds at a cost of 4.22 cents per pound.

The second month she ate 85 pounds of corn; 15 pounds of oats: 45 gallons of skim milk and gained 48 pounds at a cost of 4.21 cents per pound.

The third month she ate 115 pounds of corn; 20 pounds of wheat; 15 pounds of oats; 60 gallons of skim milk and gained 75 pounds at a cost of 3.96 cents per pound.

The fourth month she ate 125 pounds of corn; 15 pounds of oats; 50 pounds of middlings; 58 gallons skim milk and gained 78 pounds at a cost of 4.39 cents per pound. She weighed 303 pounds and was six months and two days old, making a daily gain of 2.11 pounds in the contest.

During the four months feeding period she ate 420 pounds of corn; 35 pounds of wheat; 60 pounds of oats; 50 pounds of middlings and 198 gallons of skim milk. The entire cost of feeds with corn at 65 cents per bushel; oats at 37 cents per bushel; wheat at 90 cents per bushel; middlings at $1.35 per hundred pounds and skim milk at two cents per gallon was $10.614, or 4. 19 cents per pound.

The grain feeds were mixed and put to soak in hot water every night for the next day's feeding and fed in a milk slop.

She was kept in a pen at one end of a double corn crib that had a concrete foundation high enough so she could go under where it was cool.

At the Lake County School Fair, Oct. 14, 1916, she took first place for which I received a blue ribbon; $5 in cash and am to receive $12 to go to the Purdue Short Course next January. My sow is estimated at $50 for a brood sow. My total receipts are $67. and the total expenses are $15.614, making a net profit of $51.39.

I intend to enter this sow in the brood-sow contest next year.

Up-to-Date Farm Home.

One of the finest and most up-to-date farm homes in Lake county—should be seen to be appreciated. We do not believe a boy or girl in a home like this would ever care to go to the dull, hum-drum life of the cities.

Another Modern Farm Home.

It migh be said that this farm home is on one of the best tile-drained farm in Lake county. Rock Phosphate was used at the rate of 1½ tons per acre seven years ago. Corn ripens every year on this farm regardless of the short season.

The above farm home has every inducement to make farm life the happiest, healthiest and most enjoyable place to live.

OFFICERS LAKE COUNTY AGRICULTURAL ASSOCIATION.

President—Sam B. Woods.
Vice President—C. P. Schoons.
Secretary-Treasurer—S. J. Craig.

We desire to thank our County Council, County Commissioners and other officers and associations for their foresight in co-operating to make the publishing of this report possible.

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District No. 3, James Black.....Lowell, Ind.

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THIS BOOK IS RENEWABLE BY PHONE OR IN PERSON IF THERE IS NO RESERVE WAITING OR FINE DUE.

LCP #0390

Lake County Leads the State in Greatest Number of Silos.
The Old Silo in the Barn was Built in 1893
and is Still in Use.